Fortress



American Defenses of Corregidor and Manila Bay 1898–1945

Terrance C McGovern & Mark A Berhow • Illustrated by C Taylor



TERRANCE C McGOVERN has been an avid student of fortifications for many years, with a particular interest in American coastal defenses in overseas territories. A former chairman of the Coast Defense Study Group, Terrance lives in McClean, Virginia, with his wife and three daughters.



MARK A BERHOW has long had an interest in the history of American coastal and continental air defenses. He worked at the Fort MacArthur Museum, and Nike missile post in Los Angeles for 10 years, and is a past chairman of the Coast Defense Study Group (CDSG).



CHRIS TAYLOR was born in Newcastle, UK, but now lives in London. After attending art college in his home town, he graduated in 1995 from Bournemouth University with a degree in computer graphics. Since then he has worked in the graphics industry and is currently a freelance illustrator. He has a keen interest in film making and is currently co-producing a movie.

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Series editors Marcus Cowper and Nikolai Bogdanovic

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Author's note

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For those seeking more information on the defenses of Manila Bay or who wish to comment on this book, please contact Terrance McGovern at tcmcgovern@att.net, or at the following address:

1717 Forest Lane
McLean
VA 22101
USA

Terrance McGovern, October 2002

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Introduction

One of America's greatest military defeats occurred on May 6, 1942 when nearly 15,000 American and Filipino troops defending the island fortress of Corregidor at the entrance to Manila Bay in the Philippine Islands surrendered to a Japanese landing force of 1,000 men. The fall of the reputedly "invincible" Corregidor and its supporting island forts was a low point for the Allies during the war in the Pacific. The words "Corregidor" and "Bataan" would enter the language as "fighting words," as America sought to make amends for defeat in the Philippines. Revenge would follow only three years later, as the island fortresses were retaken from the Japanese in a bloody campaign.

How and why were these formidable fortifications built and developed? Why did these defenses fall in both 1942 and 1945? This book will endeavor to detail the design and purpose of the American defenses of Corregidor (America's "Gibraltar in the East") and Manila Bay, and explain why the defensive principles failed to prevent the fall of these island forts.

Historical background and setting

The Philippine archipelago, a collection of over 700 islands located in the Pacific Ocean roughly between the island of Formosa to the north and Indonesia and Dutch New Guinea to the south, was first visited by the Europeans of Ferdinand Magellan's circumnavigating fleet in 1521. The islands were under the control of Spain until the waning years of the 19th century. Following the events of the Spanish American War in 1898, the islands became a territory of the United States of America. The United States established its primary military and administrative headquarters in Manila. The former Spanish naval yard at Cavite City, south of Manila, became a US Naval Station to support the American Asiatic Fleet. The defense of the naval station and the importance of Manila led the US Army to establish military reservations on the islands at the entrance to Manila Bay and to construct seacoast artillery defenses during the period 1904–21.



American soldiers on guard over a Spanish seacoast defense battery in Manila City, 1898.



Convict labor prepares by hand the foundation for Battery Crockett at Fort Mills, Corregidor Island. This photograph was taken on May 7, 1909. (NARA Still Pictures 77-F-111-72-8)

Manila, the principal city in the Philippines, is located on the eastern side of Manila Bay. Manila Bay is approximately 30 miles in diameter and reaches the South China Sea through a 12-mile entrance on its southwest side. This passage is bounded on the north by the southern tip of the Bataan Peninsula, with its nearby Mount Mariveles that rises to 4,550ft, and on the southeast by the shoreline of Cavite Province, with its Pico de Loro Hills rising to 2,230ft. Strung across the entrance to Manila Bay are five volcanic islands. The largest and most famous of these islands is Corregidor (1,735 acres) rising to 628ft at its highest point, which is also the site of the island's lighthouse (completed in 1853). Corregidor, shaped like a tadpole, is divided into named sections (west to east): Topside, Middleside, Bottomside, Malinta Hill, and the Tail. The Bataan Peninsula is 3.5 miles to the north of Corregidor's lighthouse, while the Cavite shoreline is 8.3 miles south of the lighthouse. Caballo Island (75 acres) which rises to 381ft to the southeast of Corregidor, is 2.5 miles from Corregidor's lighthouse. La Monja Island (less than 1 acre) lies about 3.7 miles due west from Corregidor's lighthouse. Carabao Island (45 acres), with a maximum elevation of 180ft, is located 8.1 miles south of Corregidor's lighthouse, just off the Cavite shoreline. El Fraile Island (less than 1 acre) lies 6.3 miles to the southeast of Corregidor's lighthouse.

Manila Bay and the Spanish American War

As relations between the United States and Spain deteriorated in early 1898, special instructions were sent to Commodore George W. Dewey, the newly appointed commander of the American Asiatic Fleet based in Hong Kong. Dewey's objectives were to seek out and destroy the Spanish fleet in the Philippines, seize a base for further operations of his squadron, and ensure that Spain could not pose a threat to American operations in the Pacific.

War was declared on Spain by the United States on April 26, 1898. As soon as Dewey received the news, he quickly finished his preparations and sailed for the Philippines. Dewey's first concern lay in finding the Spanish fleet – whether it remained in Manila Bay, had moved to Subic Bay (a deep-water bay about 30 miles to the northwest of Manila Bay), or had sailed to another location. After checking Subic Bay and finding it empty, he headed for Manila Bay. Dewey then considered the harbor defenses his fleet might face when entering Manila Bay. He had reports that some seacoast artillery was emplaced on the islands at the entrance to the bay: in fact, the Spanish had 26 guns located at



Manila and Subic bays, the Philippines.

six different positions around the entrance. Of these only eight were modern breech-loading weapons (four located on Corregidor Island, two on El Fraile Island, and two located on Punta Lassi). Dewey also had to consider the possibility of mines blockading the entrance. His resulting plan was bold – he would steam past the artillery defenses in the dark, hoping to minimize any damage to his ships. He dismissed the mines for two reasons: the channel he was using was too deep for mines; and he thought the mines, if present, would likely be out of working order due to lack of proper maintenance.

At about midnight on the night of April 30, 1898, Dewey's fleet of seven warships and two unarmed vessels began to steam silently up the South Channel between the dark cliffs of Corregidor and El Fraile Islands. Only when the fleet was past the defensive positions did the artillery batteries open up – a short, futile barrage that came too late. The American fleet headed into the bay and arranged itself into battle formation, then waited for the light of dawn to find the location of the Spanish Pacific fleet that waited near Cavite. By noon the Spanish fleet, inferior to the American fleet in nearly every way – firepower, protection, and seamanship – was completely destroyed. Dewey now controlled Manila Bay and held the key to the Philippines; his bold attack electrified the United States and the world.

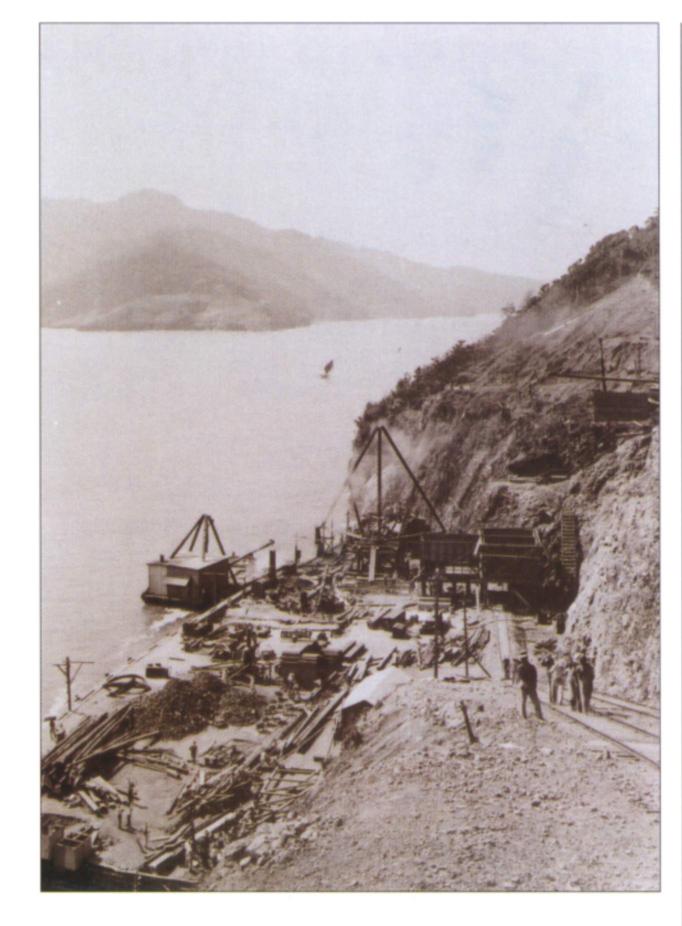
The war lasted six months: as part of the peace treaty, the United States received the Philippines. Any Filipino hope of being granted independent government at this point was dashed when the US government decided to annex the islands as a territory of the United States. Filipino insurrectionists resisted American sovereignty, beginning three long years of bitter and often brutal war that raged through the islands. The US Army had to overcome Filipino forces, regional guerrilla resistance, brigandage, tribal violence, and religious uprisings to establish American authority throughout the territory. These events resulted in the first steps toward recruiting a native Philippine military contingent and set the United States down the path of retaining a strong military and political presence in the Far East.

American seacoast defense policy 1885–1906

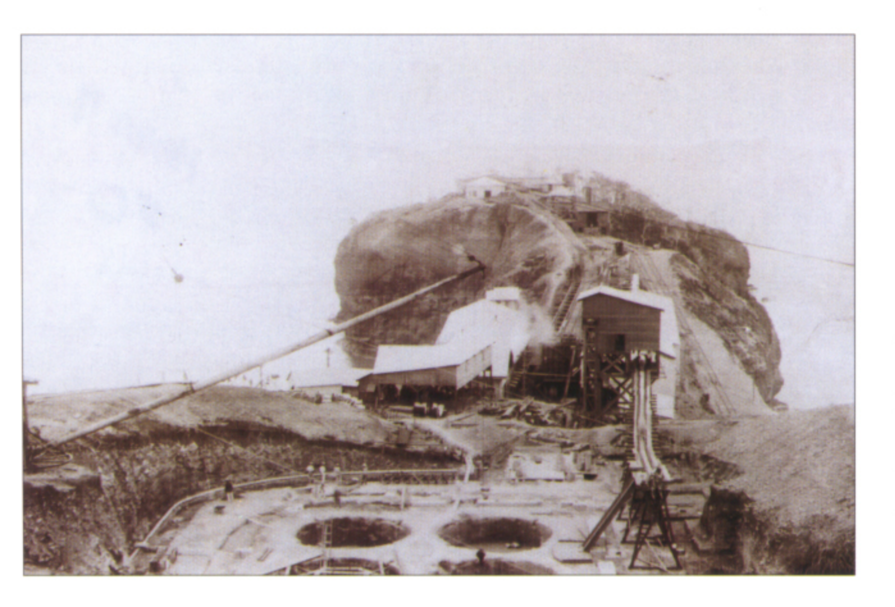
Important commercial and strategic harbors were protected by fortifications armed with artillery to deny access to invading enemy fleets. To avoid damage to its fleet, an enemy would be forced to undertake a more arduous and protracted campaign, landing at a location distant from the harbor and marching an army overland to besiege it. The time required for the enemy to mount such an invasion would also give the defenders time to organize an opposing force (a key component to successfully defending a harbor, as we shall see). Hence, the presence of harbor fortifications would either deter an attack or delay it long enough to be defeated.

During the later part of the 19th century, several advances took place in the design and construction of heavy ordnance, including the development of practical breech-loading, long-ranged rifled cannon. Coupled with these developments was a growing alarm in the United States military over the obsolescence of its existing seacoast defenses, dating from the time of the American Civil War and before.

In response to a Congressional mandate, President Cleveland appointed a joint army, navy and civilian board, headed by Secretary of War William C. Endicott, to evaluate proposals for new defenses in 1885. The report issued in 1886 provided the basis for a new fortification program that became informally known as the Endicott Program. Funding for the actual construction began in 1890, under the direction of the US Army Corps of Engineers. Unlike the traditional approach of massing cannons in a multi-story, stone or masonry structure to bring the maximum amount of firepower on the shipping channel, the new system relied on a few long-range, high-power coast artillery pieces. These new guns were dispersed over a large area in widely separated concrete emplacements,



ABOVE The steep terrain of Carabao Island made the construction of a boat-landing and an incline narrow-gage railway a key event to get men and materials to the construction sites at Fort Frank. This image was taken in September 1909. (NARA Still Pictures 77-111-124-41)



LEFT The construction of batteries Koehler and Greer at Fort Frank, Carabao Island using the "cut and fill" technique. The foundation work is under way in the future Pit B for four 12in. mortars. Past the large temporary cement plant is Battery Greer with one 14in. disappearing gun. The narrow-gage incline railway connected the construction sites to the landing. (NARA Still Pictures 77-F-111-124-60, taken on November 26, 1909)



This picture shows the No. 1 position, Battery Crockett at Fort Mills, Corregidor Island. The 12in. M1895M1 gun on an M1901 disappearing carriage is already emplaced though construction of the battery is still ongoing. This image was taken November 2, 1909. (NARA Still Pictures 77-F-111-72-29)

and had underground magazines and earthen and concrete parapets that were designed to blend in with their surroundings. Also developed at this time was the deployment of seacoast mortars in groups of four to sixteen, to provide plunging fire on the unarmored decks of warships. Another key part of these new defenses was the use of electrically controlled minefields placed in shipping channels. Facilities for planting, retrieving, storing and controlling these mines were installed at many locations.

The construction of these new harbor defenses was only just under way when the outbreak of war with Spain occurred in 1898, and most were not yet armed. An emergency program was initiated arming several harbors with older muzzle-loading weapons or in a few cases new breech-loading rifles mounted on old muzzle-loading carriages. In several harbors the controlled mines were deployed. After the war, the construction pace was increased. In 1901 the US Army Artillery Corps was reorganized and expanded to man these new defenses.

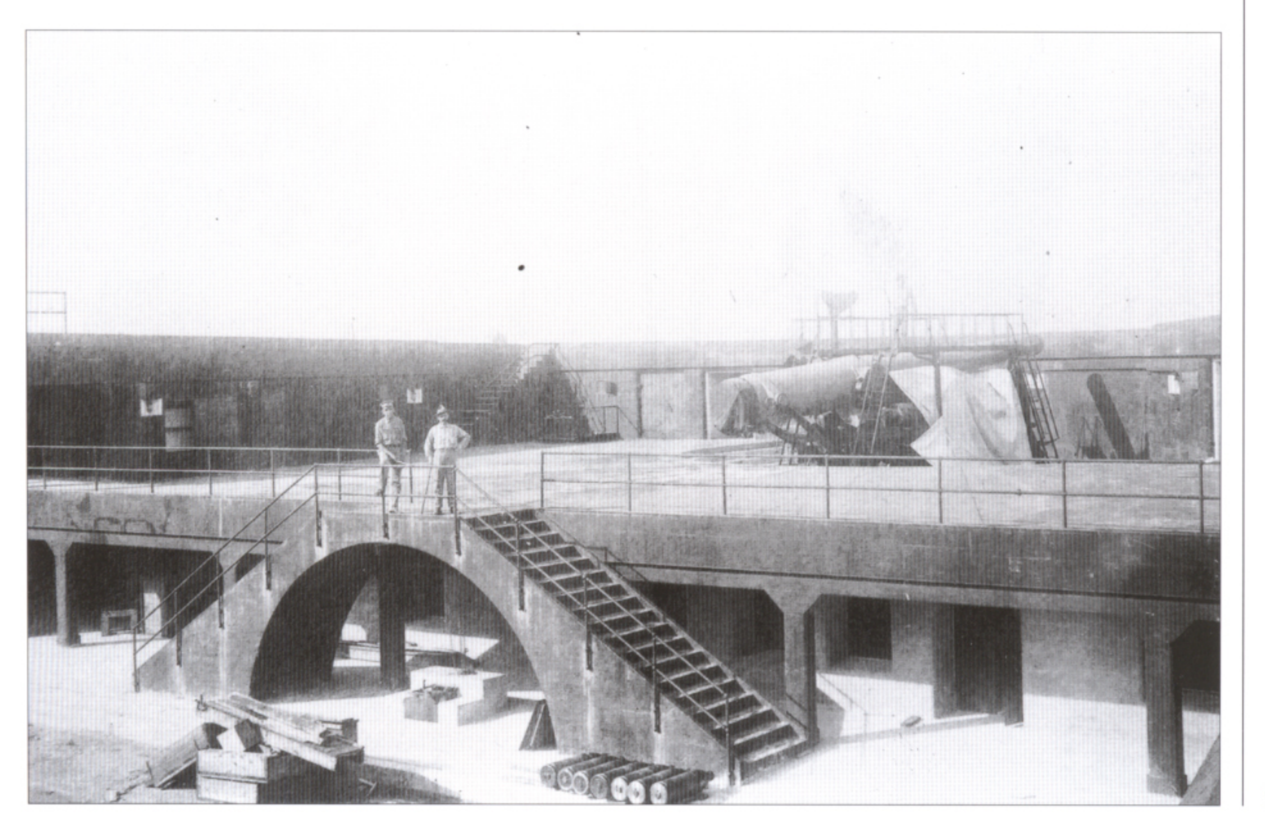
By 1905 the defenses planned as a result of the Endicott Board were nearing completion in the continental United States. President Theodore Roosevelt then convened another board to review, re-evaluate, and update the seacoast fortification projects, chaired by his Secretary of War William N. Taft. Most of the changes recommended by this board were technical in nature and made possible by the advent of commercial power-generating plants. The board recommended adding searchlights, interior and exterior electrical lighting, harbor-wide telephone communication systems, electrically driven ammunition handling, and the use of a more sophisticated optical aiming technique which was coordinated by telephone communication. The board also recommended the fortification of key harbors in the newly acquired territories of Cuba, the Philippines, Guam and Hawaii, and the construction of the planned defenses for the Panama Canal. These harbors were key coaling yards and naval stations for the US Navy, and important economic trade and shipping centers for American business interests.

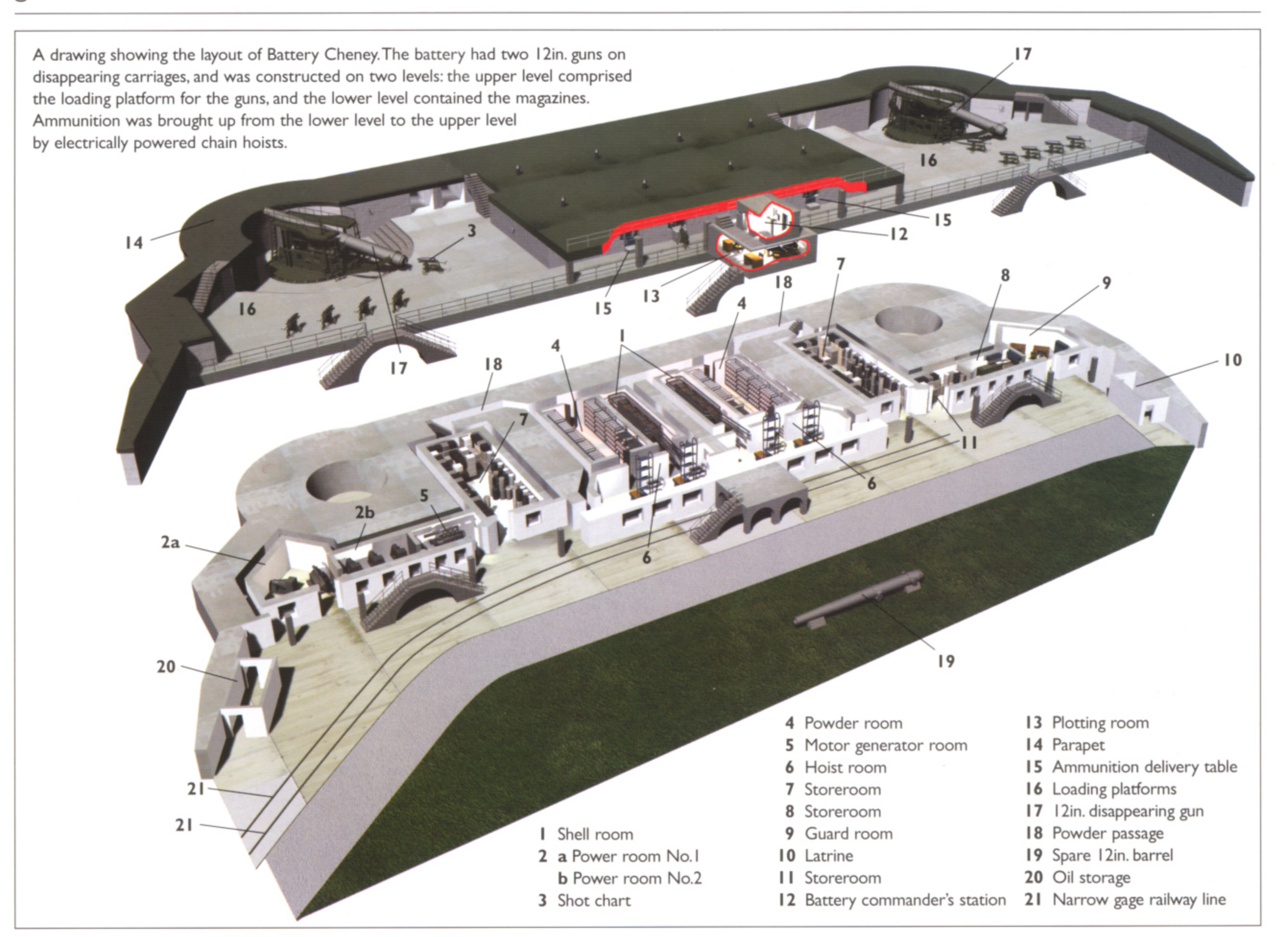
Construction of the Manila and Subic Bay fortifications 1902–19

The defense of Manila Bay was a key concern in safeguarding American interests in the Philippines and the Far East. The US Navy had been able to destroy the Spanish naval squadron and capture the city of Manila due to the lack of effective Spanish harbor defenses. The US government declared the Manila Bay islands military reservations on April 11, 1902. The Corps of Engineers surveyed these islands, and began construction of the first battery on Corregidor in September 1904. Lessons learned from the construction and use of the gun and mine defenses built a decade before in the continental United States resulted in a distinct change in the design and layout of the defenses built after 1904. The newer defenses would have a larger main caliber of gun, the 14in., and smaller numbers of secondary weapons than built into the previous defenses. The batteries themselves were built with larger and more spacious working and loading platforms. In many ways, the defenses planned for the Philippines were a transition between the older system of 10in. and 12in. guns and the newer 14in. guns.

Corregidor, the largest island in Manila Bay, received the bulk of fortification efforts. Between 1904 and 1910, the island was transformed into a fortress with nine major batteries mounting 25 modern coast artillery weapons, along with the necessary support facilities. The US Army designated this military reservation Fort Mills (after Major-General Samuel M. Mills), and this became the main post and headquarters for the Harbor Defenses of Manila Bay. Corregidor provided the infrastructure for the construction of the other island forts. Thousands of workers,

Commissioning the battery with support equipment and ammunition. This is the No. 1 position, Battery Wheeler at Fort Mills, Corregidor Island. The 12in. M1895M1 gun on an M1901 disappearing carriage in the background is in the loading position. (NARA Still Pictures 77-F-111-67-23, taken August 13, 1909)

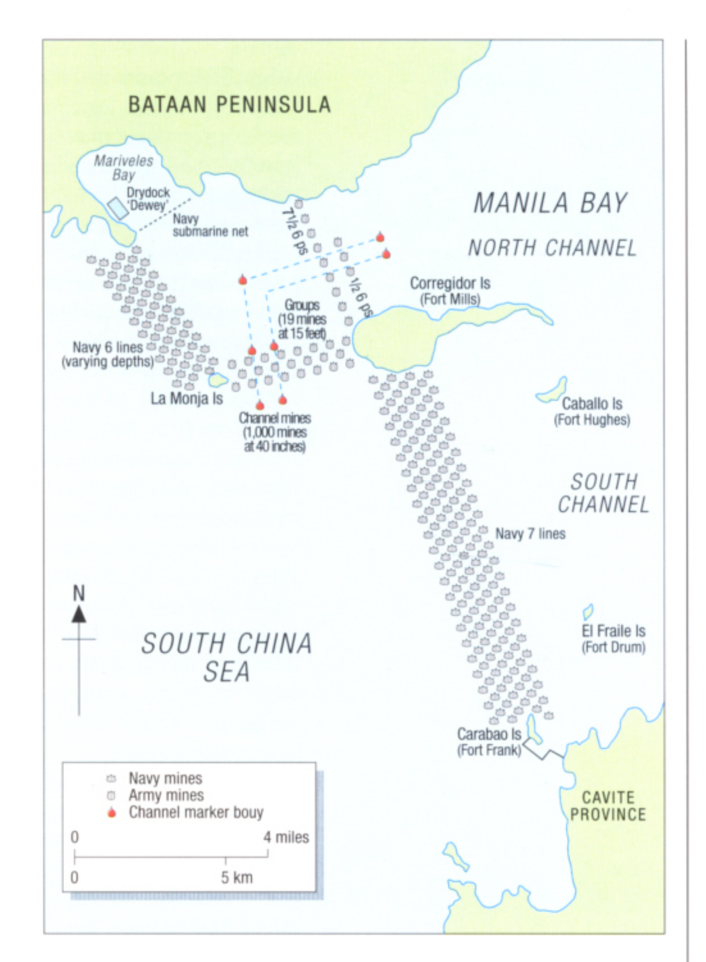




A drawing showing the layout of Battery Cheney. The battery had two 12in. guns on disappearing carriages, and was constructed on two levels: the upper level comprised the loading platform for the guns, and the lower level contained the magazines. Ammunition was brought up from the lower level to the upper level by electrically powered chain hoists.

both contract and convict labor, were brought to the islands to construct a vast array of concrete structures. Fortifications on Carabao Island were built from 1908 to 1913, and were designated Fort Frank (after Brigadier-General Royal T. Frank). El Fraile Island received the most unusual fortification ever built by the US Army. The island was leveled to the waterline and a massive reinforced-concrete structure was built between 1909 and 1918 to support specially designed turreted guns. While its formal name was Fort Drum (after Brigadier-General Richard C. Drum), it became known locally as the "concrete battleship." Caballo Island was fortified from 1911 to 1919, and was designated Fort Hughes (after Major-General Robert P. Hughes). The US Army would also name each gun battery upon completion after deceased US Army personnel in honor of their achievements. As each defense work was completed by the US Army Corps of Engineers and armed by the US Army Ordnance Department, its operation would be transferred to the US Army Coast Artillery Corps.

The US Navy did not like the shallow waters of Manila Bay – it wanted its main Far East naval station in the deeper waters of Subic Bay. To defend this potential anchorage, the Army purchased El Grande Island, located in the middle of the entrance to the bay, in 1905. The island was fortified during the years 1906–10, and was designated Fort Wint (after Brigadier-General Theodore J. Wint).



The mine defenses in Manila Bay, December 1941. The Army's controlled minefields in the South Channel had been removed by this date and replaced with the Navy's contact mines.

The weapons of the American seacoast defenses in the Philippines

The US Army's two main coast defense weapon systems during this period were controlled mines and seacoast artillery, both of which were used in the defense of Manila Bay. Controlled minefields were an important element of the US Army's doctrine of harbor defense. Both the North Channel and the South Channel had controlled minefields, while fields of US Navy contact mines covered the flanks of the channels. This weapon system had many components, such as mine storehouses, cable tanks, loading facilities, mine planters, mining casemates, mine control stations, seacoast searchlights, and protective gun batteries. These secondary gun batteries consisted of 6in. guns in disappearing carriages and 3in. guns on pedestal mounts. Their mission was to protect the controlled minefields from minesweepers and to stop torpedo boats from penetrating the bay.

The US Army's other main weapon system was the primary gun and mortar batteries. The gun batteries consisted of 14in., 12in., and 10in. breech-loading rifles mounted mainly on disappearing carriages. The Buffington-Crozier disappearing carriage was the standard for primary weapons in the US Army for almost 30 years. The main purpose of the disappearing carriage was to limit the time the gun was exposed to direct fire from attacking warships. This was accomplished by having the gun in the down position for loading and servicing. Tripping the counterweight within the carriage raised the barrel above the parapet for firing. Firing the gun generated enough recoil to lower the barrel back down to the loading position. Usually, a battery consisted of two disappearing guns installed in a two-level reinforced-concrete emplacement. While emplacement

designs varied with each location, the lower level contained ammunition magazines, power generator rooms, storerooms, and shell hoists. The upper level incorporated the gun platforms, loading platforms, receiving tables, shot truck areas, observing stations, a plotting room, and a battery commander's station. The front of the emplacement, up to the top of the parapet, was buried below ground, making it almost invisible from the sea, while the rear and the top of the battery were open with no provision for land or aerial defense. Most batteries were generally detached from others and dispersed around a large military reservation to provide the best field of fire on the shipping lanes and to ensure that enemy fire would have a difficult time destroying all the batteries.

The other primary seacoast weapon was the 12in. mortar, actually a short-barrel breech-loading rifle. The mortar battery's basic purpose was to fire a wide pattern of projectiles in a high arc that would plunge through the relatively thin deck armor of warships. A typical mortar battery had a high reinforced-concrete parapet with traverses that formed a series of pits. These pits were usually open to the rear but occasionally they were completely surrounded, with access through a tunnel. A battery had one to four pits with two or four mortars in each. Between the pits or around their sidewall were ammunition magazines, power generator rooms, shot truck areas, storerooms, and a plotting room.

Supporting these gun and mortar batteries were a network of fire control stations (Manila Bay's defenses had 85 stations in total), telephone exchanges, meteorological stations, command posts, seacoast searchlights, and reserve magazines. At the time of their installation (from 1909 to 1918), these primary batteries provided a very strong defense against naval attack, but not land or air attack.

The Harbor Defenses of Manila Bay were designed to allow the gun and mortar batteries to provide interlocking coverage of the approaches to the shipping channels and to afford mutual fire support. Control of the batteries was under an overall command structure that directed their use as an integrated weapon system. The batteries were functionally organized into fire commands based on their location, caliber, and function.

Construction of the supporting re-enforced concrete structures for these weapons on these islands was a daunting task. The US Army Corps of Engineers oversaw the entire operation, and the labor was obtained from the local population and also from military and civilian prisoners. Given the rough, volcanic terrain of the islands, especially on Caballo and Carabao Islands, unique emplacement designs and special equipment were required to access the construction sites. Narrow-gage rail lines including cableways were built to haul construction materials to the locations of the various concrete gun emplacements. Much of the construction material was imported from the United States and Europe. The weapons were built at several private and government foundries, and shipped to the Sandy Hook Proving Grounds in New Jersey for assembling and testing. Once tested, these weapons were disassembled and shipped to the Philippines where they were installed in the batteries, often as the concrete work proceeded.

The most complex construction work in the Harbor Defenses of Manila Bay was Fort Drum. The US Army Corps of Engineers specifically designed Fort Drum on El Fraile Island for two custom-built 14in. two-gun turrets and four 6in. casemated guns. The massive 350ft × 144ft × 40ft reinforced-concrete structure had an 18ft-thick steel-reinforced concrete deck and 25ft- to 60ft-thick exterior walls. The lower level had the engine room, fuel tank, water tank, and plotting rooms, 6ft below mean low water. The second deck contained the magazines for the 14in. turrets, the storage rooms, and the mess facilities. The main deck contained the living quarters and the magazines for the 6in. guns. The gun turrets were the only purpose-built turrets ever installed by the US Army. Each turret contained two specially built M1909 wire-wound 14in. guns. The M1909 turret

mountings were incorporated into the turret structure by using ring cradles that rested on girder side-plates. Each turret was divided vertically in five compartments: the gun compartment, upper handling room, electrical compartment, the lower handling room, and the pit. The turrets were faced with 18in. armor plate, the sides with 14in., and the top with 6in. The casemated 6in. guns were mounted two on each side and one above the other as secondary armament. The top of the structure featured the 14in. gun turrets and a cage mast housing the battery commander's station. The structure looked like a huge ship on its way out of the bay and quickly became known as the "concrete battleship."

By 1908 the seacoast defenses were progressing to the point where military planners started to develop plans for land defenses for the islands (in most cases, beach defenses) to hold out against attacks from Bataan and Cavite by invading land forces. After several studies, funding was approved in 1911 (supplemented in 1916) for the construction of a series of prepared land defenses on Corregidor, Caballo and Carabao islands which included positions for 3.2in. and 6-pdr field guns (later 75mm guns), machine gun positions, command stations, trenches, equipment and personnel pathways, searchlights, protected infantry tunnels, siege material storehouses and counter-battery siege gun emplacements. Work on this project went on from 1911 to 1920, with most of proposed features being finished: surplus World War I weapons were transferred and stored in the Philippines. After 1920 these defenses were not kept up, and ultimately replaced with a revised land defense scheme hurriedly implemented in 1941.

In 1915 a US Army board reviewed the current status of the American seacoast fortifications in light of the development of battleships with high-angle, large-caliber guns. They recommended that the major caliber of seacoast weapons be upgraded to the 16in. gun, and that a higher angle of fire be used to achieve a longer range. Until these new weapons could be developed, the board recommended using the existing stock of 12in. guns (up to then used on disappearing carriages) and for them to be mounted in a new "long-range" barbette carriage at key harbors. In 1917 this part of the project was approved and emplacements for two of these new 12in. guns were built at Fort Mills during the years 1919–21. This battery of two guns was to turn out to be the last major armament emplaced in the Philippines by the United States.

The Manila Bay defenses were state of the art for defense against attack by naval capital ships when they were designed and built in the 1904–17 period. However, they were rapidly outmoded by developments in naval warships in the mid-1910s. By 1919, several foreign battleships could outrange any harbor defense weapon in the United States. Moreover, the high firing angles of naval guns generally nullified the protective advantages of the type of emplacement used by both the disappearing guns and the mortars then employed by the United States. The emergence of the airplane during World War I as an offensive weapon made the exposed US seacoast artillery emplacements an open target, and vulnerable to aerial bombardment. By 1922, with the possible exception of the turrets of Fort Drum and the new long-range 12in. batteries, the defenses of Corregidor and Manila Bay were considered obsolete.

Garrison structures

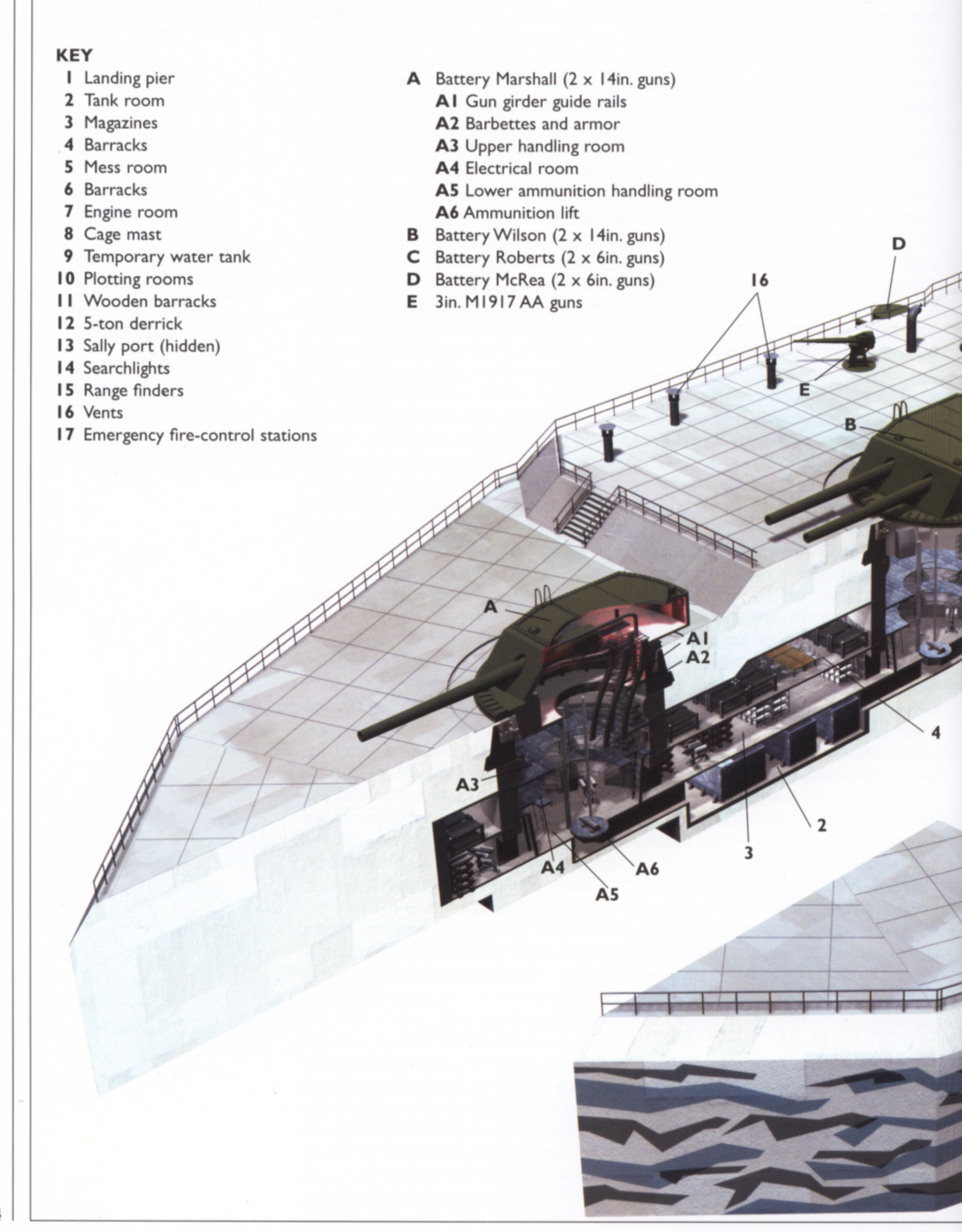
The United States Army maintained a garrison of between 4,000 and 14,000 troops in the Philippines between the years 1905 and 1940. The troops consisted of infantry (mainly at Fort William McKinley and Fort Stotsenburg) and the soldiers of the US Coast Artillery Corps (officially formed in 1907) who manned the defenses of Manila and Subic Bays. While each of the five fortified islands had support facilities for its batteries and mine casemates, the main post and long-term living quarters were at Fort Mills on Corregidor Island. Between 1904 and 1910, the island was transformed into a small city with officers' quarters,

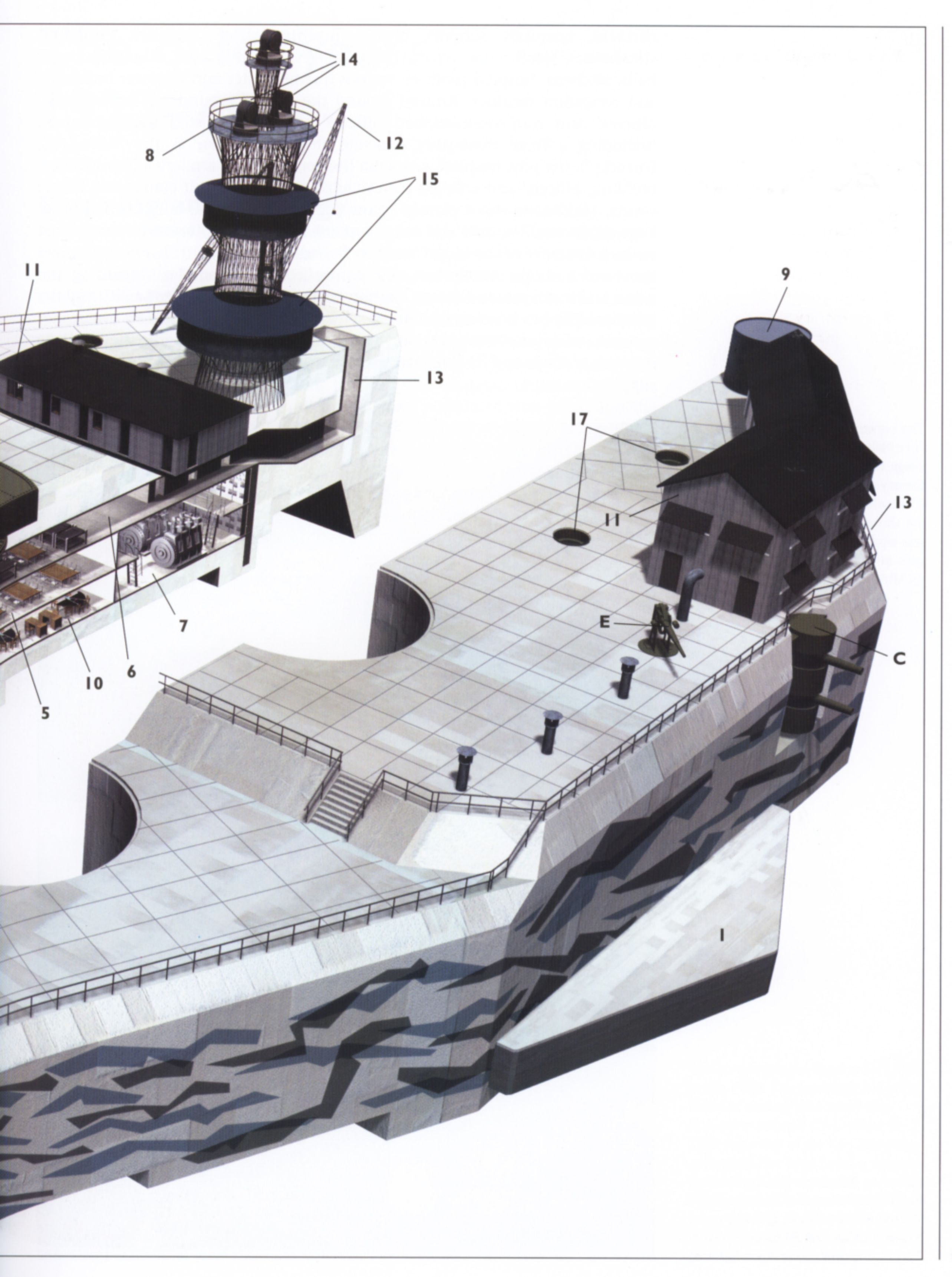
Fort Drum, El Fraile Island, in the late 1920s

KEY

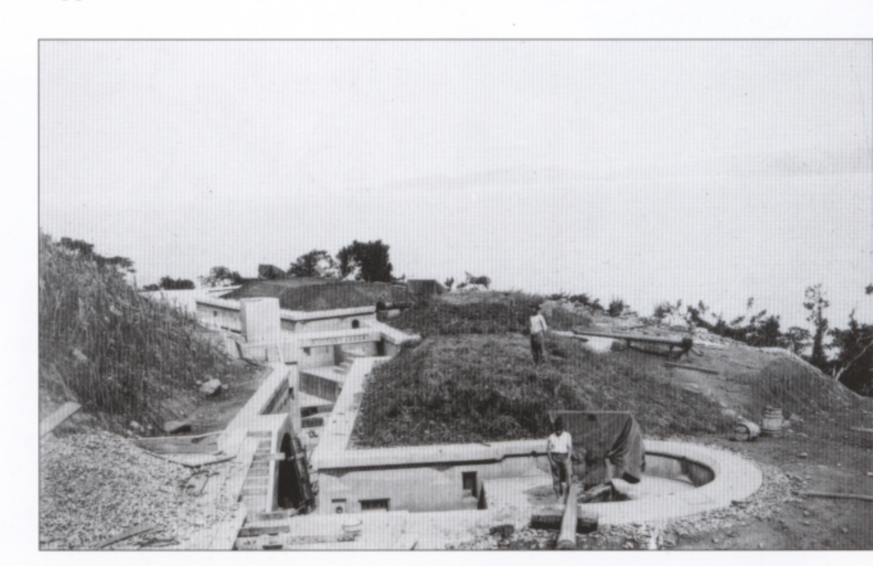
1 Landing pier
2 Tank room
3 Magazines
4 Barracks
5 Mess room
6 Barracks
7 Engine room
8 Cage mast
9 Temporary water tank
10 Plotting rooms
11 Wooden barracks
12 5-ton derrick
13 Sally port (hidden)
14 Searchlights
15 Range finders
16 Vents
17 Emergency fire-control stations

A Battery Marshall (2 x 14in. guns)
A1 Gun girder guide rails
A2 Barbettes and armor
A3 Upper handling room
A4 Electrical room
A5 Lower ammunition handling room
A6 Ammunition lift
B Battery Wilson (2 x 14in. guns)
C Battery Roberts (2 x 6in. guns)
D Battery McRea (2 x 6in. guns)
E 3in. M1917 AA guns




14
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barracks, hospitals, schools, offices, machine shops, bakeries, churches, storehouses, warehouses, repair shops, garages, pump houses, magazines, mess halls, kitchens, hospital facilities, various quartermaster and engineer buildings, and recreation facilities. Arrayed around the parade ground on Topside were officers' and non-commissioned officers' quarters, enlisted men's barracks (including a huge three-story concrete structure known as the "Mile-Long Barracks"), the post hospital, a cinema theater, the coast artillery administration building, officers' and enlisted men's clubs, as well as a golf course and tennis courts. Middleside was a plateau below Topside, which also contained another large regimental barracks and other support structures. Bottomside was located at the low center of the island between Topside and Malinta Hill, and contained the various shops, warehouses, the controlled mine complex (including the north and south mine wharves), the power plant, the cold-storage facility and the principal Filipino housing (the Barrio of San Jose). The island had its own water systems, telephone networks, and electrical grid. The island also had a large network of roads and its own narrow-gage trolley system for moving people and supplies around.



The construction of Battery James at Fort Mills, Corregidor Island, in an image taken on August 21, 1909. This battery overlooked the North Channel's controlled minefields and the shores of Bataan. The battery was equipped with four 3in. M1903 guns on M1903 barbette carriages. (NARA Still Pictures 77-F-111-126-9)



Lowering the turret pan into place for the 14in. turret of Battery Wilson at Fort Drum, El Fraile Island. (NARA Still Pictures 77-111-135-219, taken April 5, 1917)

The quiet years 1922–40

Planning and strategy

After 1907 relations between Imperial Japan and the United States of America became strained. Despite the mutual alliance against the Central Powers during World War I, American military strategists considered Japan and, to a lesser extent, Great Britain to be the biggest threats to US influence in the Pacific. Defending America's possessions in the Pacific from attack was the responsibility of the US War Department, which in the years following 1919 prepared a number of "war plans" to deal with war against Japan (Orange). A joint US Army and Navy planning committee in 1919 laid out the strategic objectives for the United States military forces in the Pacific. They postulated that Japan and the US were on a collision course in the Far East in both the economic and political arenas. It outlined an ambitious plan to build a fortified base on Guam from which the US Navy could protect and re-enforce Hawaii and the Philippines from the continental United States. The mission of the US Army's Philippine forces was to defend Manila and delay the enemy long enough for a superior fleet to arrive from Hawaii and Guam and defeat the enemy fleet.





The parade ground, Topside Fort Mills, in the 1930s. The top image is from a series of photographs taken by a non-commissioned CAC officer in 1930 (courtesy of the Karl Schmidt collection). The large building nearest to the flagpole is the Post Headquarter. The bottom image was taken by M.Sgt. Charles Coffin. The buildings in the background are the married officers' quarters.



Topside, Fort Mills. The "mile-long" enlisted men's barracks is in the background, with the married officers' quarters in the fore, (NARA Still Pictures)

These strategic considerations and war planning all changed as a result of the Washington Naval Treaty of 1922. The treaty reaffirmed the current political status in the Pacific, set limits on tonnage and ordnance of capital ships maintained by the signing powers, and prohibited Japan, Great Britain, and the United States from building new or reinforcing existing overseas bases. The terms of the Washington Naval Treaty essentially eviscerated the American military's 1920 war plan. The treaty eliminated the planned fortified American naval base at Guam, and the projected naval base at Subic Bay in the Philippines. It had a lasting effect on the defenses of Manila and Subic Bays by restricting the United States from expanding or improving these harbor defenses. The following years saw a continued erosion of American military might. The economic depression of the 1930s caused a general suspension of defense appropriations by the American government. Reductions in annual military funding and overall manpower resulted in placement of the smaller island forts on caretaker status from 1923 until 1937. The ability of the United States military forces to relieve the Philippines garrison had all but vanished by the beginning of the 1930s due to financial limitations placed on naval construction and the decline in army manpower. The Navy did not have the effective strength it needed to deliver a superior force to the Far East. The Army had its units "skeletonized," in many cases preserving only an administrative staff, therefore it would require time to recruit, train, and equip its forces and thus would not be available for offensive operations outside the continental limits of the United States for months.



An enlisted man, Harbor Defenses of the Philippines, in the 1930s. (Courtesy Karl Schmidt collection)

There were some improvements to the harbor defenses in the Philippines in the early 1930s. One important project was the construction of the Malinta Hill tunnel system from 1931 to 1938. The tunnel system, though not strictly speaking allowed by the Washington Naval Treaty as a defense measure, was built under the auspices of a need to extend the island transportation system to the Tail section of the island. No direct funding of this tunnel system was allowed and the fort's local commander had to fund its development by diverting money from the island's annual maintenance budget. The Malinta Tunnel system was actually built for protection of supplies and personnel from air bombardment. Upon its completion



CAC soldiers in the enlisted barracks at Fort Frank, Carabao Island, 1930. (Courtesy Karl Schmidt collection)

it consisted of a main east-west passage 1,400ft long and 30ft wide, with 25 laterals, each about 400ft long, branching out at regular intervals from each side of the passage. A separate underground hospital section located to the north of the main system had 12 laterals of its own. On the south side of the complex was a Navy tunnel system, which was further excavated in 1940–41. The Malinta Tunnel was reinforced with concrete walls, floors, and overhead arches, with blowers to furnish fresh air. The island's electric trolley system ran through the tunnel's main corridor. No other major improvements in defenses occurred on the fortified islands until the coming of World War II.



Bottomside and Middleside at Fort Mills, Corregidor Island, as seen from Malinta Hill. Starting at the North Mine Wharf, you can follow the road past the Quartermaster area to the large Middleside Barracks. In the far distance, the Topside Barracks can be seen. (NARA Still Pictures 77-PIA-97, taken August 6, 1920)

Another key change in policy was the passing of the Tydings–McDuffie Act by Congress in 1934, which created a Filipino government in the Philippines, the Philippine Commonwealth, to supervise the transition to full independence in 1946. Thus by the mid-1930s, military planners had to consider the eventual withdrawal of their forces from the Philippines, while seeking to ensure the security of a valuable ally against Japan. In 1935 Douglas MacArthur retired from active duty and became the military advisor to the Philippine Commonwealth to help the fledgling government create its own armed forces. While MacArthur continued to support the notion that the Philippines could be defended from attack, the actual progress in creating an effective Philippine Army was slow.

The officers stationed in the Harbor Defenses of Manila and Subic Bays toward the end of the 1930s had few illusions about their fate in the event of war with Japan. Most were confident that the defenses were sufficient for keeping the Imperial Japanese Navy out of the bay. However, if land operations by the Japanese resulted in the capture of the heights on either side of the bay, the fortified islands would soon fall. The Japanese would have to be stopped at the invasion beaches for the Philippine forces to hold out for any appreciable amount of time.

Meanwhile, back in the United States, the military planners came up wit what turned out to be their final prewar plan. The US would reinforce the ke overseas territories of Panama, Hawaii and Alaska, build up the necessa offensive forces, and then advance across the Pacific to defeat the Japane forces. The defense of the Philippines would be left to the local garrison ar whatever Filipino forces could be raised.

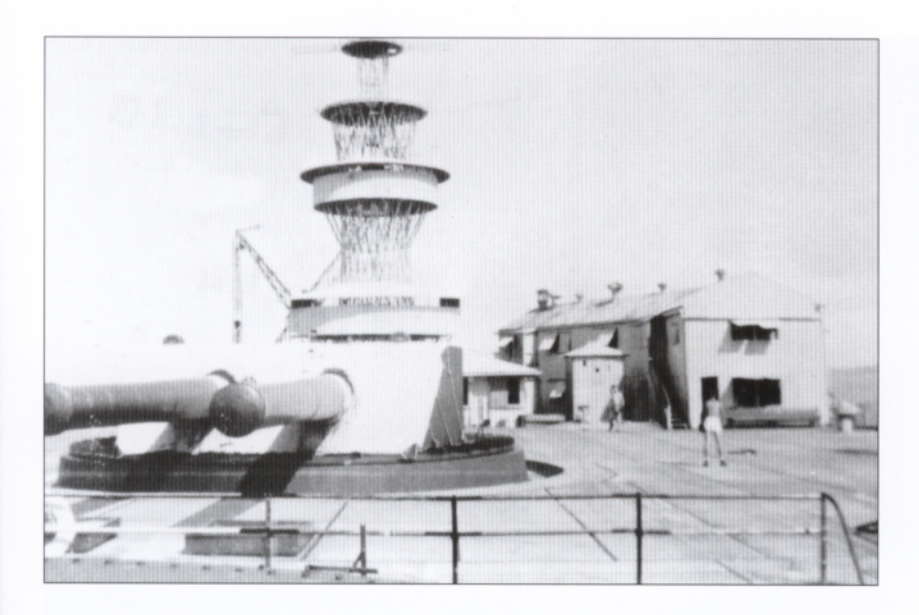
Life in the Philippine forts

The life of the military personnel assigned to posts was fairly routine. Followir the 1924 reorganization of the US Coast Artillery Corps, there were tw regiments of Regular Army coast artillery, the 59th and the 60th, and tw regiments of Philippine Scouts, the 91st and the 92nd officered by American assigned to the defenses. These regiments retained more of their allotte strength than similar regiments in the United States due to their overse location. Most of the officers who served with the Philippine Scouts thoug highly of their men, they worked hard and learned their training well. In th words of veteran Charles F. Ivins: "They were a lean, sharp lot – their canv gaiters scrubbed white, fitted over brilliantly shined shoes without a wrinkl their uniforms made by Chinese tailors at their expense, fitted to their tri athletic bodies and bore no relation to the ill-shaped travesties of uniform then issued to stateside garrisons. They could shoot well. Their drill was preci … They talked of jungle marches, of the Igorrote head-hunters of Luzon, of th bloody treacherous Moros of Mindanao and Sulu … These men were n intellectuals, probably a sixth-grade education was their limit, but they we tough and they were loyal and they loved soldiering." As usual with any arm garrison they had their problems – tropical diseases and too much sun, as we as the usual problems with drinking, fighting, and venereal diseases, but all i all the American coast artillerymen seemed to get along reasonably well wit the natives they lived and worked with. During the 1930s, with the cutbacks i military spending, many of the regular tactical and drill practices were n conducted for lack of funds. Despite all these cutbacks and neglect by th government back in Washington, D.C., the officers and enlisted men wh served there were proud of their duty and served well.

Lt. Col. Aaron A. Abston recalled the lifestyle of the officers in 194 "Officers and men could get a pass any weekend they were not on duty; lea was available at the commanding officer's discretion. Generally I would go t Manila. We would go every two or three months and stay at the Army-Nav Club. A few officers were able to visit some of the other islands or go to th mainland. The better points of service in the Philippines were the same as ar



Malinta Hill, Bottomside, and the northside wharves at Fort Mills, Corregidor Island, 1930. A US Army mine planter is tied up at the North Mine Wharf. (Courtesy Karl Schmidt collection)



On top of Fort Drum, El Fraile Island, from a series of photographs taken by George Ruhlen, CAC, in 1935. The wooden barracks in the background were temporary, peacetime quarters. (US Army's Casemate Museum, Fort Monroe)

small army base, friends made in service together on a small post are friends for life. The bad points were the climate and separation from home. Quarters were roomy and as comfortable as an un-air-conditioned facility can be. Due to an overflow of bachelor officers, three of us were assigned to a married set of quarters where we were served by a cook and two house boys, paid in Philippine currency. For recreation we had swimming, tennis, golf, badminton, and the usual formal and informal military social activities."

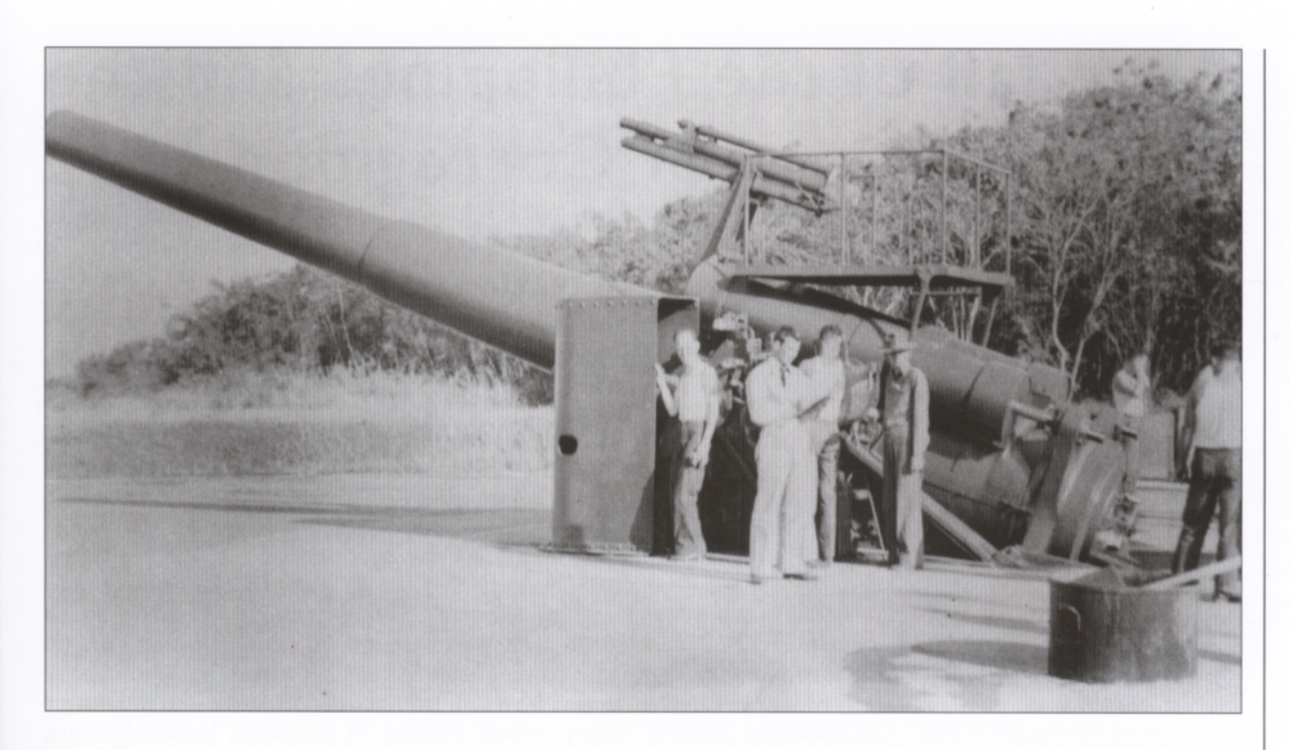
To the officers' wives, Philippine duty was probably not a general favorite. Mrs Kay Abston recalled: "I loathed Corregidor! It had intense heat and thieving servants, all on a small island. Fortunately, we had many good friends, which made it bearable. We played a lot of bridge, golf, Mah Jong, and such. I would shop, swim, golf, and bowl, except for six months we spent on Fort Hughes. Some officer's wives were hired to work in the post exchange, the hospital, and the school. With no air-conditioning, it was too hot in the afternoon, so we all took siestas. The climate caused many problems, especially mold and mildew during the rainy season. We always had cockroaches, rats (especially at Fort Hughes), ants, termites, etc., ad nauseam!"

An enlisted man's point of view comes from Master Sergeant Herbert Markland of the 59th Coast Artillery Regiment: "Life on Corregidor during peacetime was really nice. We worked hard, but also had ample time to ourselves. The weather was good, and the facilities for soldier recreation fine. The 'mile-long barracks' was really nice. It seemed like it was over 1,000ft long, but not quite as modern as Ft. Sill's barracks had been. The shower room and latrines were all on the ground floor. Each battery had its own mess on the ground floor. Everything except the barracks proper was on the ground floor; orderly room, supply room, barber shop, and day room. Regimental HQ was in the center of the barracks. The regimental HQ also had an indoor gym, library, shoe shop and other things around the perimeter of the upstairs HQ. The PX and the guardhouse were on the ground floor. This guardhouse was used to manage the guard mounts that were maintained for the batteries and other important structures on the island.

"Reveille was at about 6:00 in the morning, and you would fall out for Physical Fitness Training (PT). Then we went for showers and on to breakfast. First formation was called at about 8:00 or so, and we would march down to the battery for drill. We came back for lunch, and then in the afternoon back to the battery for maintenance or details. We never saw the officers in the afternoon. They were either at the golf course, conducting 'officer type' training, or doing office work. The afternoon belonged to the Corporals. We



Battery Smith in action. The gun section of a battery of the 59th Coast Artillery Regiment is loading the 12in. gun on an M1917 barbette mount.



Battery Hearn, Fort Mills, in the 1930s. The 12in. M1895A2 gun is mounted on a long-range M1917 barbette carriage. Note the Excalibur gun mount on top, which was used for practice firing. The container to the right foreground holds the rod for cleaning out the barrel after each firing.

knocked off at about 3:00 and got ready for retreat at either 4:30 or 5:00. One morning per week we would do close order drill on the parade ground with the band. We would wear our brown (almost green) flannel shirts for that, or cotton khaki. We always conducted drill with fixed bayonets. That was a tradition we held from the old foot artillery of the Mexican War. Using fixed bayonets during drill was a special privilege for only the Coast Artillery Corps, especially this regiment.

"The Regimental Parade was on Thursday afternoons. We marched in columns of fours and then formed battalion squares with three battalions. Each battery was a line in the battalion square. We had our own regimental march, 'The March of Lorraine', a French march. These parades were really something and I really enjoyed them. When the General (Harbor Defense Commander) reviewed the troops, a waltz was usually played. 'In the Good Old Summertime' was the most commonly played. The other regiments held parades on separate days. The 60th Coast Artillery (AA) paraded on Tuesday, and the two Philippine Scout regiments paraded on Mondays and Fridays.

"Friday mornings were devoted to infantry tactics and maneuvers. We concentrated on squad and platoon level drills for the protection of our beaches and the gun position proper. Individual techniques were also practiced, such as hand-to-hand combat and bayonet drills. Saturday mornings we had inspections. They were very rigid, and they usually ended at about 11:00 in the morning. Soldiers and junior NCOs were generally free for the rest of the weekend unless you had guard or a detail.

"Life was really good and pleasant, though a bit monotonous. The food was good. Topside itself was very comfortable and at night sleep was pleasant, unlike the rest of the Philippine garrisons. There were no mosquitoes since we were so high. The barracks was on the highest point of the island and you could see out to sea both ways. Middleside also had no mosquitoes. Unfortunately, Bottomside had mosquitoes where the barrio and Malinta Tunnel were."

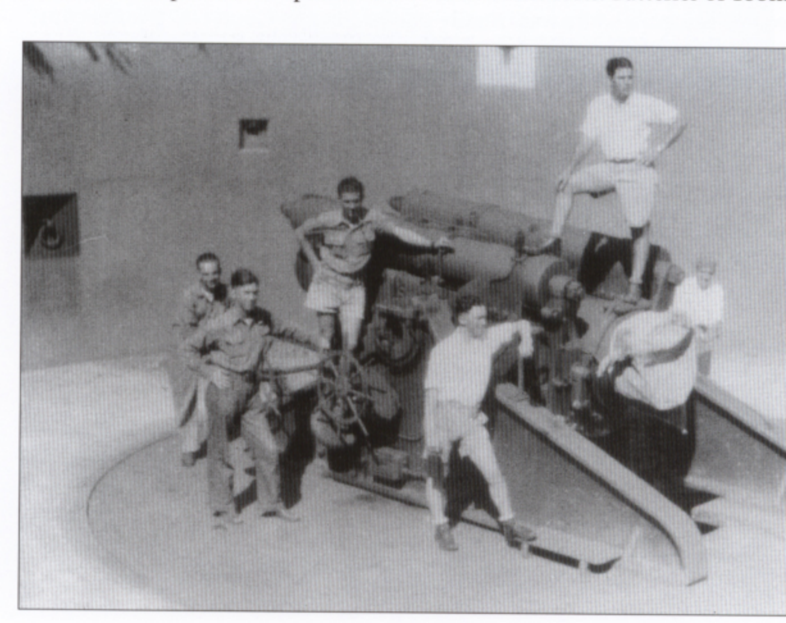
The fall of the Philippines and t siege of Corregidor 19

American preparations 1937–41

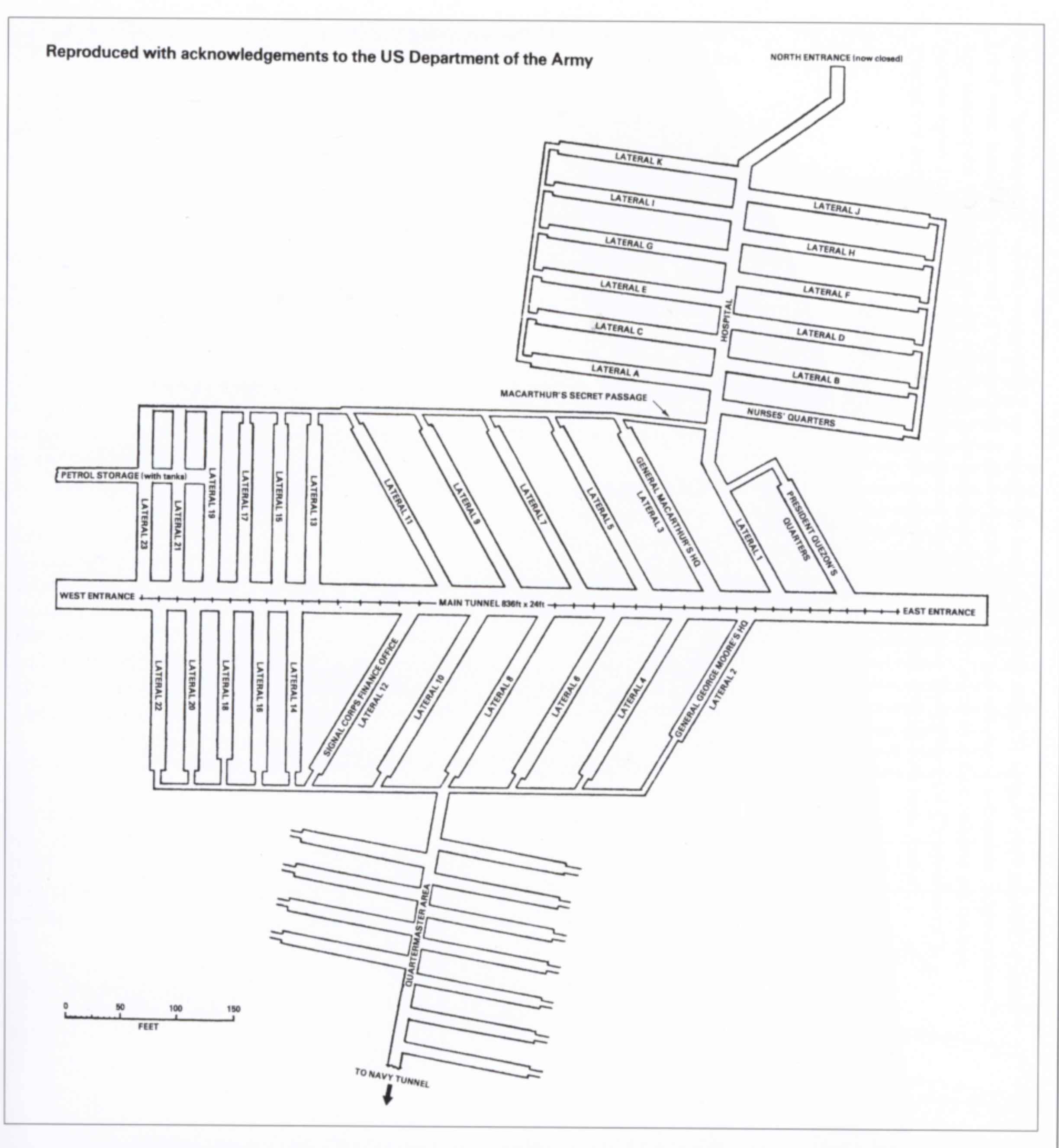
Once Japan revoked the Washington Naval Treaty in 1937, the United Sta free from the constraints on improving the defenses in the Philippines. Th several additional 155mm GPF tractor-drawn guns and eight 8in. railway guns were sent to the Philippines. The 155mm guns were added to the defenses, the 8in. guns were stored. The biggest changes came in 1940 United States began to react to the war in Europe and the Japanese aggres China, with the passage of the Selective Service Act and increased fund military weapons and naval construction. The defenses of Corregidor and Bay were upgraded to active status in June 1940, but overall the Phi defenses still remained a low priority.

On July 26, 1941, President Franklin D. Roosevelt mobilized the Philippine Army into federal service and simultaneously appointed C MacArthur to the command of the newly formed US Army Forces in East (USAFFE). The War Department sent hundreds of airplanes and tho of American soldiers (many recent draftees or activated National units) to strengthen its forces around Manila Bay. MacArthur and h now worked feverously to prepare for the defense of Luzon. A hasty Inlan Defense Program was initiated to utilize the 8in. and 155mm guns sent Philippines in 1937, but only surveys were completed by December Expansion of the Philippine Army was hampered by the lack of trained and military equipment, while language and cultural differences amo recruits also contributed to the difficulties in forming proper units.

The results in the Harbor Defenses of Manila and Subic Bays were more satisfying. Nearly all the seacoast artillery guns were brought back to condition by mid-1941. Mines, both the Army-controlled type and the contact type, were deployed across the harbor entrance in July 1941. A syst beach defense plan was implemented at each of the forts. Batteries of 155m

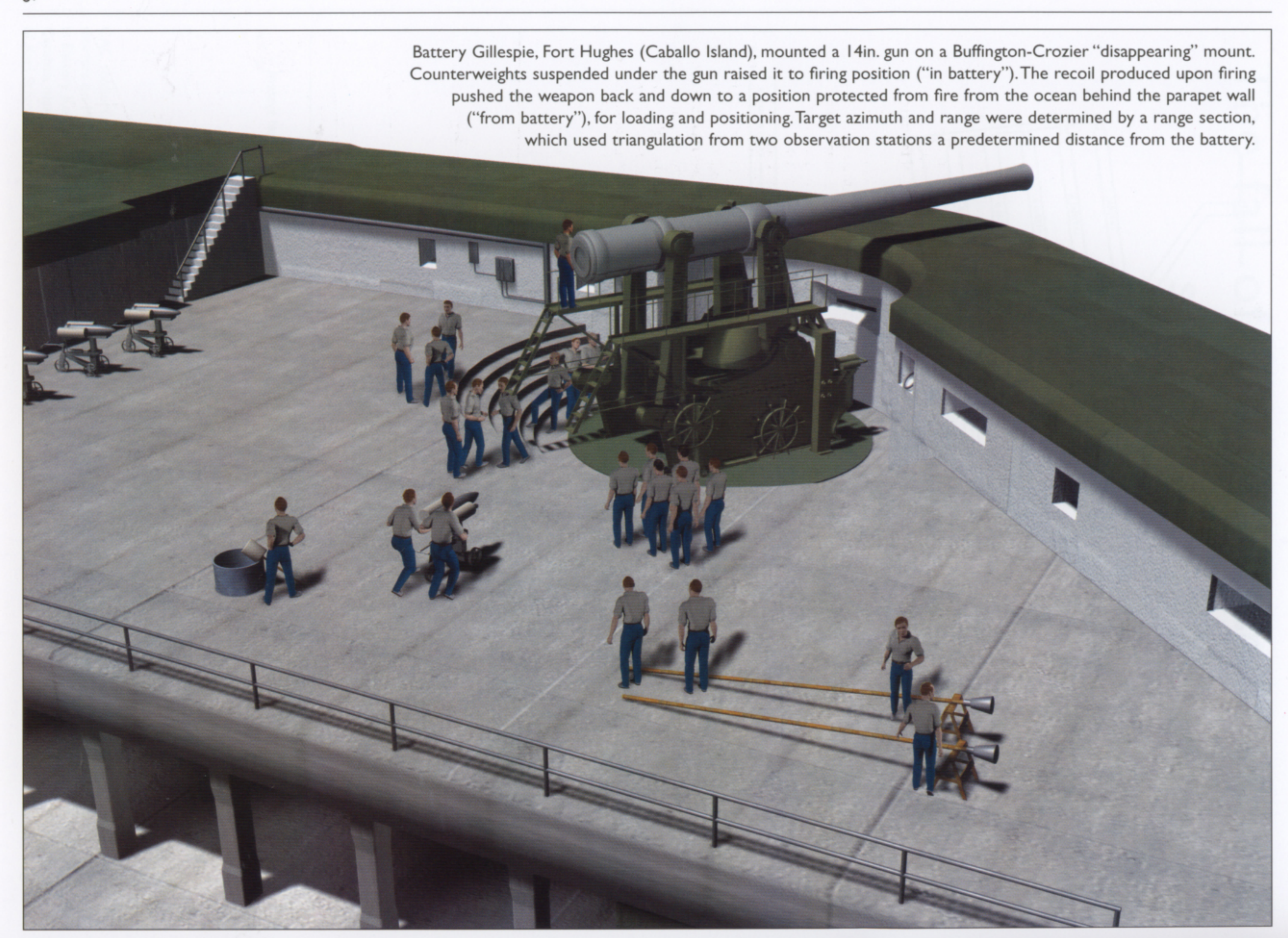


CAC soldiers around 12in. M1908 mortars on M1908 mortar carriages in Battery Koehler, Fort Frank, Carabao Island, in 1930. (Courtesy of Karl Schmidt collection)



The Malinta Hill tunnel system.

75mm guns were deployed, along with barbwire and other obstacles. The four coast artillery regiments were brought up to full strength. The anti-aircraft units were provided with the most modern weapons available at this time, the mobile 3in. M3 gun on the M2 barbette carriage. Lt. Colonel Aaron A. Abston observed: "In April the 60th [Coast Artillery Regiment] received 1,200 raw recruits to bring the regiment up to full strength. The regiment was tasked to be at full readiness by January 1942. The pace now quickened with training the new troops and working on the new equipment. I expected that war would eventually break out with Japan due to their aggressive actions. Our regimental and battalion staff officers were well trained but lacking in experience. Looking back I don't see anything else we could have done to prepare the regiment more for the coming war."



Battery Gillespie, Fort Hughes (Caballo Island), mounted a 14in. gun on a Buffington-Crozier "disappearing" mount. Counterweights suspended under the gun raised it to firing position ("in battery"). The recoil produced upon firing pushed the weapon back and down to a position protected from fire from the ocean behind the parapet wall ("from battery"), for loading and positioning. Target azimuth and range were determined by a range section, which used triangulation from two observation stations a predetermined distance from the battery.

As negotiations with the United States broke down and the war in Europe hotted up, the leadership of Imperial Japan decided to take this opportunity to seize the territories they wanted by military force.

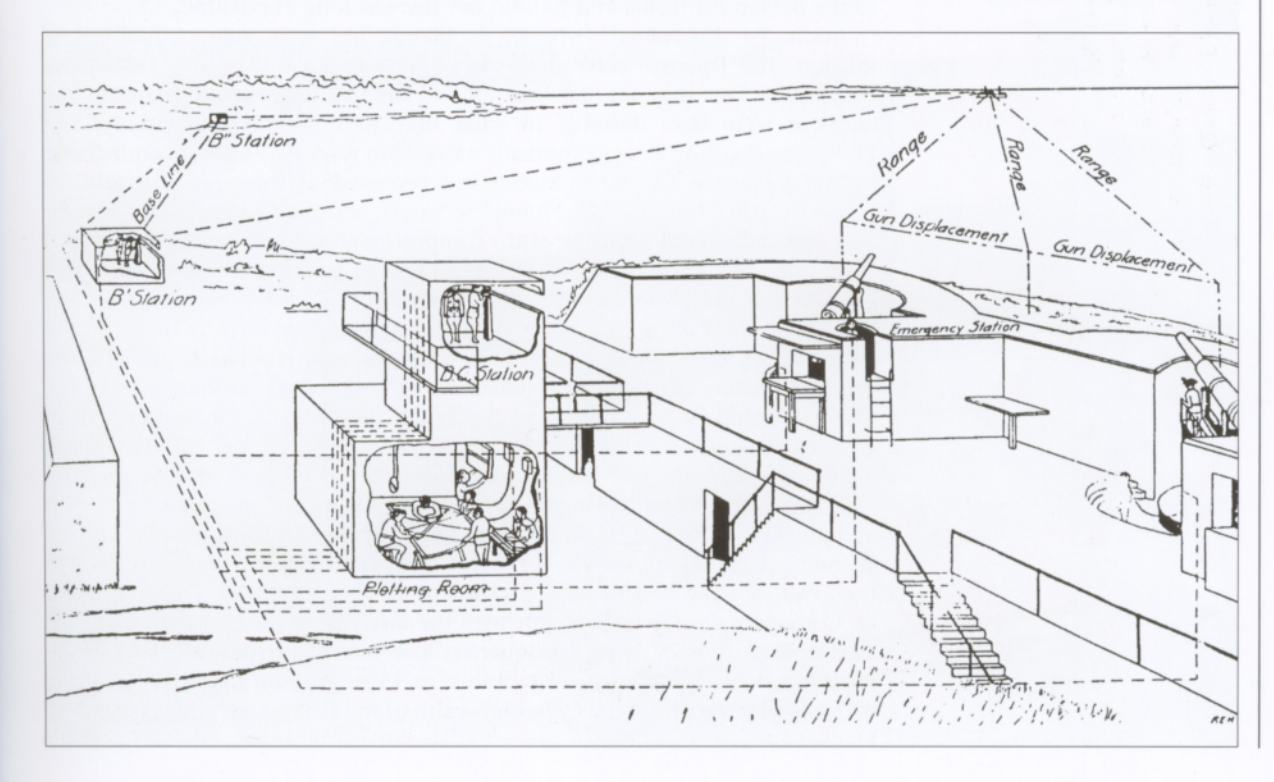
Japan attacks, December 1941

On December 7, 1941, airplanes of the Imperial Japanese Fleet achieved surprise in their attack on the US Pacific Fleet in Pearl Harbor. In two hours they sank or crippled 18 warships, destroyed or damaged 188 of Oahu's 394 aircraft, and killed 2,403 American servicemen. A few hours later, Japanese pilots struck at the American forces in the Philippines and achieved similar surprise and success against Clark Field and the Cavite Naval Station. The attack on Pearl Harbor changed everything strategically for the Americans. With a damaged Pacific Fleet, the first priority immediately became to secure the Alaska, Hawaii, and Panama perimeter. There would be no relief for the forces in the Philippines, their duty was clear – delay the Japanese for as long as possible.

It is interesting to note that while nearly all of the officers were aware that help would not be coming from the United States, the enlisted men remained optimistic and talked about waiting for the relief to come. MacArthur, for all his talk and confidence, seemed both surprised and shaken by the attacks. The Philippine Army was nowhere near ready for the task of defending the island of Luzon. MacArthur would have to make do with what he had on hand. He organized his forces into two commands, one to confront invaders in the south and the other the invaders in the north. He still hoped to halt any invasion at the landing point, but was rapidly losing time.

The Japanese Army planned a swift 50-day campaign to secure Luzon and the rest of the Philippines. The amphibious assault was assigned to Lieutenant-General Masaharu Homma's 14th Army. Homma's initial landings, launched from Formosa, were on Northern Luzon on December 10, and they easily established a beachhead and began moving south. His main force landed at Lingayen Gulf on December 22, scattering the scarce forces arrayed against them. Two days later a secondary force landed in Southern Luzon and began to

A horizontal fire control diagram for the American coast artillery. The target was located by the method of intersection used in surveying: the direction of the target was determined from two known points. The system required a base line on the ground, the azimuth and length of which had been accurately determined by surveying; two observation stations, one at each end of the base line, in each of which was mounted an instrument for measuring azimuths; a plotting room with plotting board; and the necessary communication lines. In the resultant triangle, one side and the two adjacent angles were known: the result was drawn graphically on the plotting board. (US Army)





Japanese Mitsubishi Ki-21bombers over the Tail section of Corregidor Island, 1942. (Japanese Army)

drive north. With no hope of halting the Japanese forces, General MacArthur fell back on an old plan: to cover a strategic withdrawal of the American forces to the Bataan Peninsula and to hold out there as long as possible.

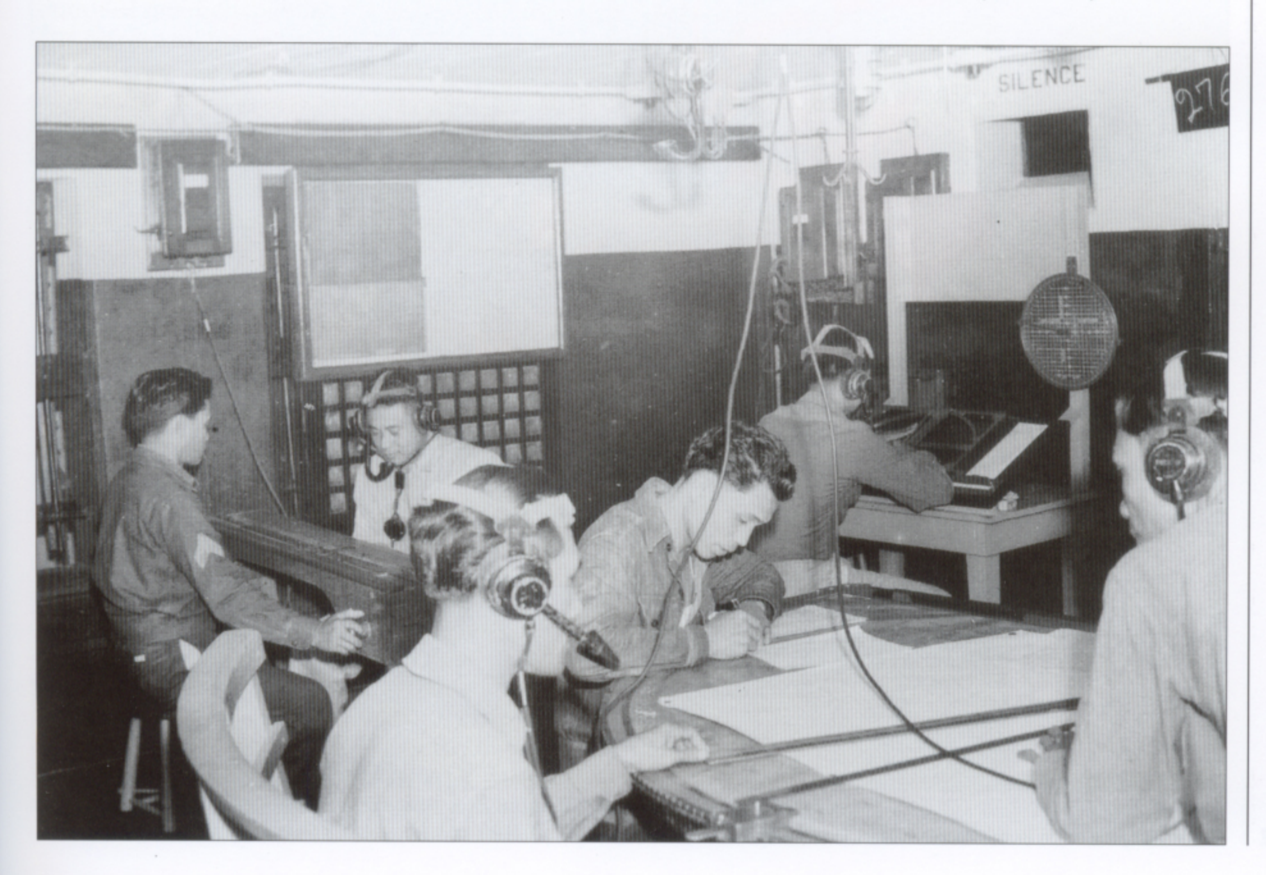
Ironically, the Harbor Defenses of Manila Bay were able to fulfill their mission. The Japanese Navy made no attempt to force their way past them, despite the fact that the defenses located on the four islands guarding the entrance were little different to what they were 20 years previously. The Philippine Coast Artillery Command, activated in August 1941, was commanded by Major-General George F. Moore and consisted of three seacoast artillery regiments (the 59th, the 91st Philippine Scouts, and the 92d Philippine Scouts) and one anti-aircraft unit (the 60th) comprising about 5,700 men. In addition there were about 600 Philippine Army soldiers in training that were organized into the 1st and 2d Coast Artillery Regiments (PA) but operated under the Philippine Scout units. The forces on Corregidor, now known by its nickname "The Rock," were divided into four commands: the seaward artillery fire command under Colonel Paul D. Bunker; the anti-aircraft fire command under Colonel Theodore M. Chase; and the beach defense and the inshore patrol commands which were both under Captain Kenneth M. Hoeffel, USN. The other forts were separate fire commands under the Philippine Harbor Defense Command: Fort Frank had a garrison of about 200 men; Fort Hughes 800 men; and the formidable Fort Drum 200 men. On December 24, Subic Bay was ordered abandoned and along with it Fort Wint. The small garrison there deactivated their weapons and headed for Corregidor or other assignments. The population on Corregidor soon swelled rapidly with the survivors of the US Naval Station at Cavite, then the US Army headquarters and service personnel from Manila. MacArthur's headquarters was established on Corregidor on December 25 along with the government of the Commonwealth of the Philippines and its president Manual Quezon.

The island forts under siege, January–March 1942

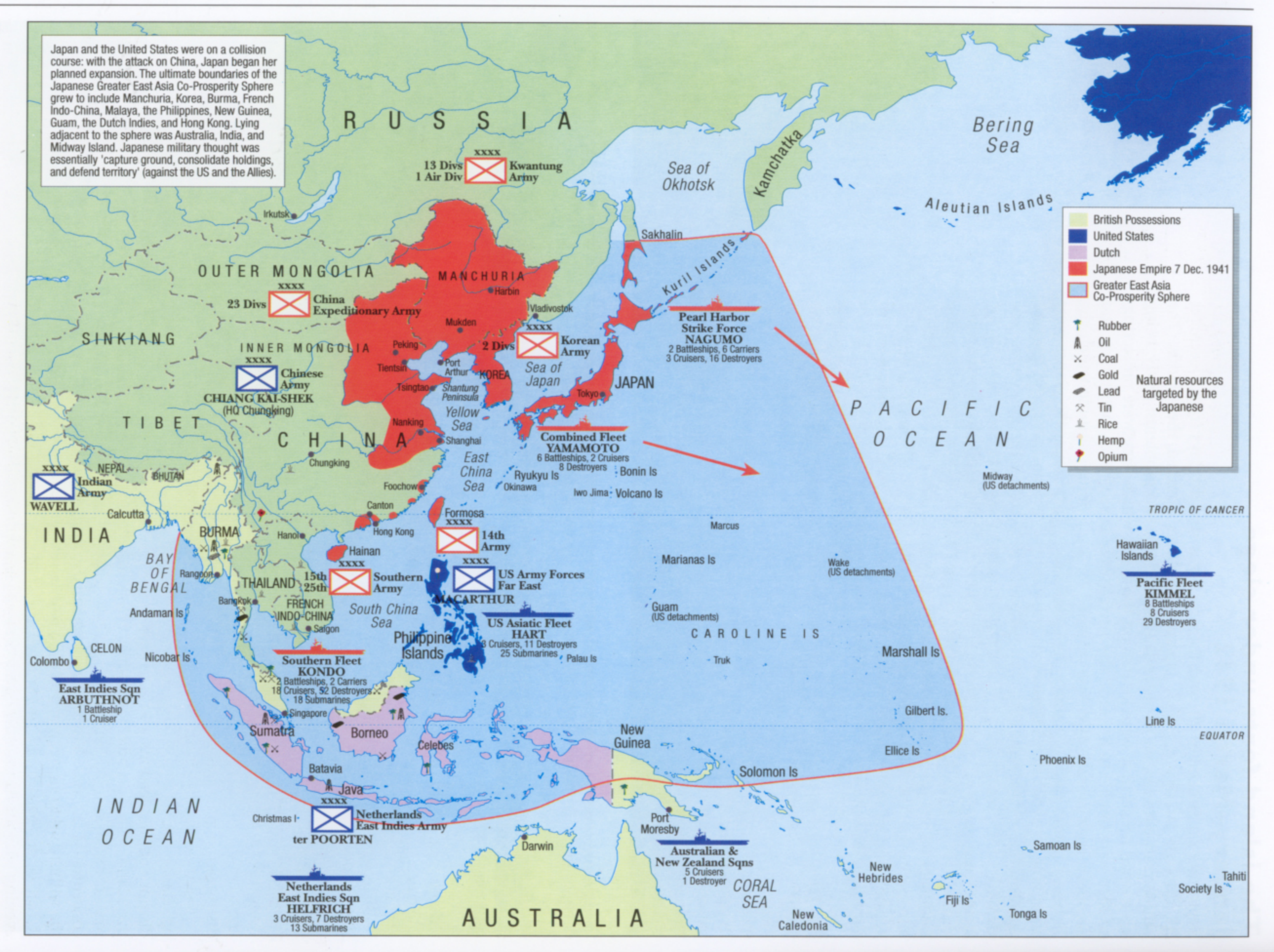
Beginning on December 29, and then for eight straight days from December 31 through January 6, 1942, Japanese airplanes bombed the islands. The anti-aircraft batteries on the islands suffered from two problems: firstly, being on a small island they were located on the target which they were protecting, so they were unable to fire until the aircraft were already over their target; and secondly, their ammunition was designed for a maximum altitude which the Japanese planes could fly above. As a consequence, the Japanese planes were soon able to avoid the AA fire from the islands. The damage to the seacoast artillery was surprisingly light, and was easily repaired by the gun crews. The damage to the buildings on Corregidor, however, was extensive. Most of the houses and nearly all of the barracks had been hit. The electric train system was disabled as was the water distribution system. Nearly half of all the wooden buildings on the island had been destroyed by fire. Following these bombings, the troops on the islands began to dig in, building a bewildering array of tunnels and air raid shelters. At this point, the troops on the islands were put on half rations, to conserve dwindling supplies for the times ahead.

The successful withdrawal of American forces into Bataan had disrupted the Japanese timetable and a campaign against those forces was initiated on January 7. Towards the end of January, reports came in of the movement of Japanese artillery into the heights of the Cavite Province across from Forts Frank and Drum, and on February 5 the 105mm and 155mm guns began firing. The emplacements for the seacoast artillery weapons had not been designed for defending against attack from the rear. However, a few weapons could be brought to bear on the Cavite shore, especially the 12in. mortars at Fort Frank, Fort Hughes, and Fort Mills, and the 14in. turrets at Fort Drum. The American gunners at Fort Frank and Fort Drum returned fire, but had a difficult time

The plotting room detail of Battery E, 91st Coast Artillery Regiment calculates target information at Battery Grubbs. (NARA Still Pictures SC-118544, taken April 21, 1941)



The military situation in the Pacific Ocean, December 1941.





General Douglas MacArthur and Major-General Richard Sutherland in their office in the Malinta Tunnel, March 1, 1942. The tunnel was built as a protected site from aerial bombardment. During the 1942 siege it housed the various command staffs, a hospital, civilians, and supplies for the island's garrison. (US Army, NARA)

spotting their targets due to the defiladed position of the Japanese guns and the position of the sun. The limitations of the ammunition for 12in. mortar batteries soon became apparent – there was a short supply of the projectiles with instantaneously detonating fuses and they had to be used cautiously. Most of the ammunition was fused to explode after it penetrated the armored deck of a ship, but was less than effective against land targets. This artillery duel continued intermittently for the next two months. The bombardment caused little damage to the seacoast artillery. The worst blow was actually struck by the destruction of Fort Frank's freshwater pipeline from Calumpan on the Cavite shore on February 16. Despite several efforts, the pipe was not repaired until March 9, and the garrison had to rely on its distillation plant for a limited supply of fresh water. In late February, the American command decided they could ill-afford to have one of their highest-profile commanding officers killed or captured by the Japanese and so ordered MacArthur to leave the Philippines. On the night of March 10, he and his family, along with President Manual Quezon and his staff, boarded four PT boats and made the dash for Mindanao, arriving on March 14.

By early March the Japanese had finished reinforcing and repositioning their artillery on Cavite, despite harassing fire from the Americans. On March 15 they opened fire with 240mm howitzers, pounding both Fort Frank and Fort Drum. Fort Drum withstood the bombardment well, but Fort Frank began to show signs of strain, losing most of its 3in. AA and 155mm guns, and a major explosion in one of its protected tunnels on March 21 killed 28 and wounded another 46. Despite this pounding, damage to the eight mortars and two 14in. disappearing guns was slight and quickly repaired.

On March 24 the Japanese began a new aerial bombing campaign to soften up Bataan for the final assault. Corregidor was a target as well; mostly to disrupt communications and supply support to Bataan. The bombing raids on the islands were sporadic, sometimes heavy, sometimes not at all. The attacks were considerably lighter during the first week of April as efforts were being concentrated on the defenders in Bataan. On April 8 orders were issued for the withdrawal to Corregidor of the 2d Battalion of the 60th Coast Artillery (AA): it had been operating in support of the efforts on Bataan, and it arrived that evening without its valuable equipment and ammunition. Parts of several other unauthorized units arrived on the island as well.



The finance office in Lateral No. 12 of the Malinta Tunnel, April 24, 1942. (US Army Signal Corps, NARA)

All during the night of April 8 batteries fired at Japanese positions on Bataan. Herbert Markland noted: "We fired until the Bataan line fell back to where we were masked by our own casemate hill. This was well after midnight. Battery Smith fired longer than we did; I guess they had a better field of fire for that shoot. That was also the first time I remember Battery Smith firing. Up until that time, Hearn and Geary had done most of the major-caliber firing from Corregidor."

On April 9, the remaining American forces in Bataan surrendered. Major General Jonathan M. Wainwright ordered all artillery fire on Bataan to halt for fear of hitting Americans in the process of moving along the roads. The island fortresses were now on their own.

The island forts under siege, April–May 1942

There was little hope for the island forts to last very long on their own once Bataan had fallen. On half rations, they only had enough food to last for six to eight weeks at most, given that there were almost 15,000 people on the island forts. Life under siege on the islands settled into a dreary routine. The men spent some of the day working on repair projects or building new communication and spotting systems. The rest of the time was spent whiling away the hours. Life everywhere on the islands went underground. The command elements of the US Army and that of the Philippine Government, along with the civilians on the island, were all housed in the Malinta Tunnel. A trip through the tunnel never failed to arouse wonder – Philippine and American government officials, officers of all services and ranks, nurses and medical doctors, war correspondents, laborers, barbers, convalescents, and soldiers all mixed up together.

Herbert Markland described the time in a fairly upbeat tone: "Our battery had its own mess section and fixed pretty good chow. Chow varied from company to company, depending upon the skill of the mess sergeant and the resourcefulness of the executive officer. We set up a field kitchen on a concrete platform behind the battery. We moved the coal stoves down from the barracks building so we could save gas. That fuel was critical as it was used in the mess section's field stoves. Long before Bataan fell, we improvised a water main for the kitchen. The mess section cooked right up to the end, and even a few meals beyond that time. We were lucky our mess section was not hit. We never lacked for good food. The kitchen was in a low spot, and was fairly well protected. We stacked old powder cans full of sand around the site. They were stacked about two or three deep and stopped most of the fragments."

As the American defenders on the islands showed no sign of surrender, Homma now had to plan an assault against Corregidor. Homma quickly ran

into some problems in arranging for this assault – it took time to bring his landing craft down from up north into Manila Bay, and an outbreak of malaria reduced the number of effective troops he had for about a month.

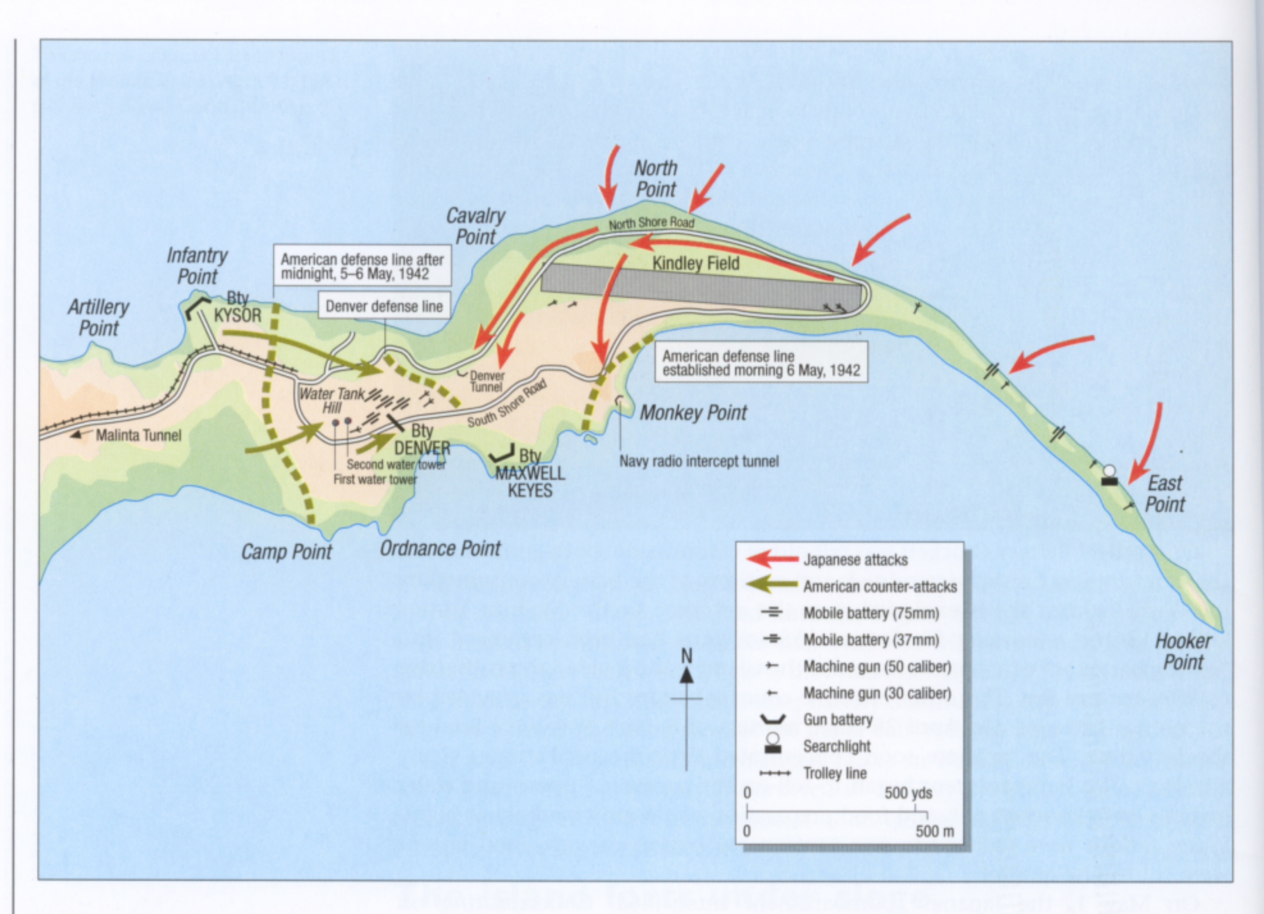
As soon as Bataan fell, the Japanese began emplacing heavy artillery on the heights above Mariveles and along the shore at Cabcaben. Some 18 batteries consisting of 116 artillery pieces were arranged on both sides of the channel, and quickly began to shell the islands. Up until this time, nearly all of the American artillery guns ready for action at the beginning of the campaign were still in operable condition. Any damage caused by the air bombardments and the shelling from Cavite had been repaired by the gun crews. On April 12 most of the Japanese batteries were in place and the bombardment of the islands, supported by aerial bombardment, began in earnest. "One day's shelling," remarked one officer, "did more damage than all the bombing put together." Pounded by 240mm, 150mm, and 105mm guns and howitzers, the continuous, close-range shelling began to blast away the reinforced-concrete structures of the fixed batteries. Even though many of the 240mm shells were duds, the sheer volume began to chip away at the defensive structures.

On April 24 Battery Crockett was put out of commission: both guns were hit, the ammunition hoists were ruined, and sections of the battery consumed by fire. Two 240mm shells exploded near the entrance to the Malinta Tunnel killing 13 and wounding 50. Several 155mm guns had been organized into "roving batteries" which moved around the island and provided some effective counter-battery fire. The other effective counter-battery fire was provided by the mortar batteries. On April 28 three mortars of Battery Way were fired for the first time. The Japanese soon concentrated their fire on Batteries Geary and Way. The bombardment began to tell on the garrison – power and water systems were knocked out, and food preparation could only be done at night. Water rations were reduced to one canteen per person per day, food rations were cut to one-quarter.

On May 1, the Japanese bombardment intensified. Concentrating on potential landing sites and on the remaining effective batteries, the defenders knew the Japanese were preparing for an assault. The next day was even worse. During a five-hour period some 3,600 240mm shells along with shells of other caliber fell in the vicinity of Batteries Cheney and Geary. The entire north shore of Corregidor was worked over, as was Malinta Hill and the island's tail. Then, at 1030 a 240mm round penetrated Battery Geary's magazine, which detonated with an explosion that rocked the island. The 10-ton mortars were strewn about, all eight guns were permanently out of action. The pace of the bombardment picked up each day through the next three days.



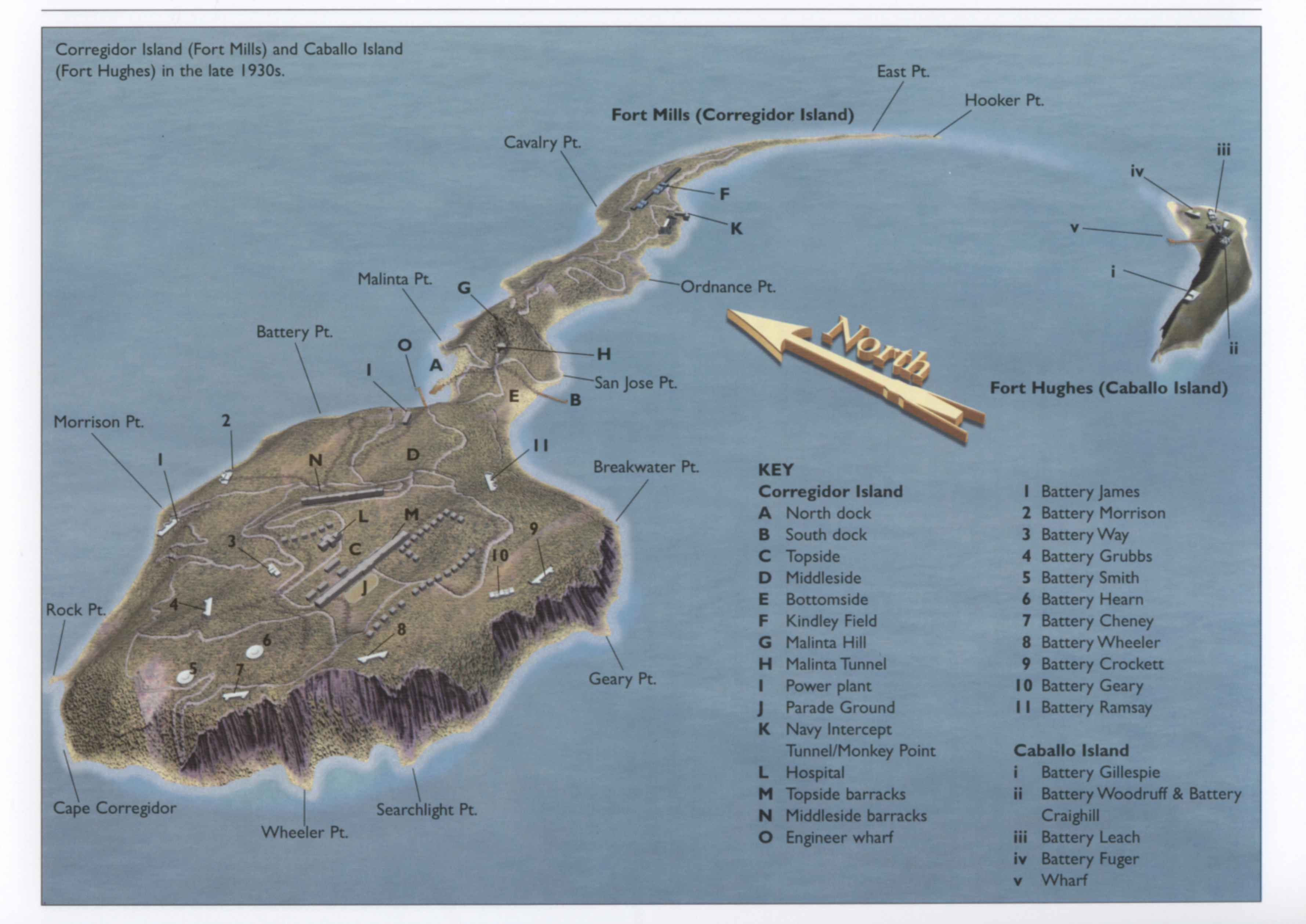
Surrender scene outside the Malinta Tunnel, May 7, 1942. (Japanese Army)



Japanese assault on Corregidor, May 5–6, 1942.

By the end of May 5, many of the gun batteries were out of commission, generally out of action for lack of a respite in the shelling to complete effective repairs. On Corregidor only three 155mm guns remained in operation; the 14in. guns of Fort Drum and those on Fort Frank were still able to fire, but their effectiveness was diminished by range. Most of the beach defenses were in ruins, and the soldiers were getting to the end of their limits of endurance.

The Japanese had arranged for the assault to occur in two waves. The first wave departed the evening of May 5, heading for an intended landing area at Infantry Point on the Tail section of Corregidor. Currents swept them further south to North Point further down the Tail. Somewhat confused and disorganized, the Japanese ran into a vigorous defense put up by American defenders on the shore who managed to sink several boats and inflict heavy causalities. As the second wave of attackers approached, the bright moon illuminated their boats and the Americans opened up with everything they had, including the 14in. guns of Fort Drum and the remaining mortars of Batteries Way and Craighill. Despite the appalling losses, the Japanese managed to get ashore and establish a beachhead. By 0100 on May 6 they had taken the hill north of Kindley Field, known as Water Tank Hill. The Americans now rallied their remaining forces to hold a position just south of Infantry Point, and began a series of counterattacks against the Japanese position. The see-saw battle continued for five hours with each side running dangerously low of ammunition. At 1000 on May 6, the Japanese brought up three small tanks to their position which was only a few hundred yards from the Malinta Tunnel. The Americans had no weapon to counter the tanks and were concerned about the impact of tanks firing into the crowded tunnel system. On the basis of these observations, Wainwright decided to surrender. He ordered the men to destroy their weapons and sent a message to the Japanese that he was ready to meet with their commander to talk terms.



Corregidor Island (Fort Mills) and Caballo Island (Fort Hughes) in the late 1930s.
Fort Mills (Corregidor Island)
Fort Hughes (Caballo Island)
East Pt.
Hooker Pt.
Cavalry Pt.
Malinta Pt.
Ordnance Pt.
Battery Pt.
San Jose Pt.
Morrison Pt.
Breakwater Pt.
Rock Pt.
Geary Pt.
Cape Corregidor
Wheeler Pt.
Searchlight Pt.
North
KEY
Corregidor Island
A North dock
B South dock
C Topside
D Middleside
E Bottomside
F Kindley Field
G Malinta Hill
H Malinta Tunnel
I Power plant
J Parade Ground
K Navy Intercept Tunnel/Monkey Point
L Hospital
M Topside barracks
N Middleside barracks
O Engineer wharf
1 Battery James
2 Battery Morrison
3 Battery Way
4 Battery Grubbs
5 Battery Smith
6 Battery Hearn
7 Battery Cheney
8 Battery Wheeler
9 Battery Crockett
10 Battery Geary
11 Battery Ramsay
Caballo Island
i Battery Gillespie
ii Battery Woodruff & Battery Craighill
iii Battery Leach
iv Battery Fuger
v Wharf



Japanese troops gather by the 12in. M1895A2 gun on a long-range M1917 barbette carriage at Battery Smith, May 1942. (NARA Still Pictures SC-334320)

Herbert Markland remembers this as the saddest day of his life: "We all agreed that the Japs should never be able to make 'good ole Hearn' fire again, so as a group we decided to really destroy the gun by firing the drill shell backwards using the largest powder charge we had. The drill shell was too big for the bore, so we knew that would really damage the gun. Sergeant Touberville went down into the gun well and unscrewed the recoil oil plug and drained all the oil out. I gave my last 'Home, RAM!' when we rammed in the drill shell. Once the gun was loaded, I took a long lanyard and ran it back up over the casemate hill. Then we all went inside the casemate and closed the doors. We had no idea how this would affect the gun, but we knew it would hurt it badly. Once we were inside, I gave the lanyard a good hard yank! What a noise the gun made when fired! I went back out and there she was, ruined. We were right, we had really damaged the gun. The firing of the piece smashed the breech down against the well, cracked a trunnion, and broke the elevation segment. To top it off, that drill round probably stripped the bore, for it sure was not in the gun!"

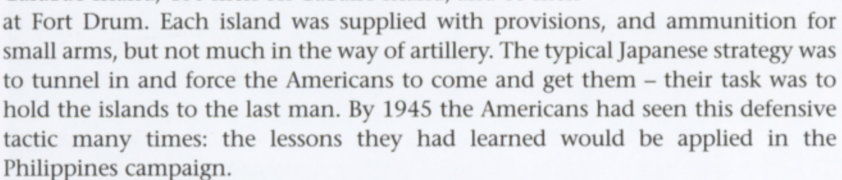
The first siege of the fortified islands in Manila Bay was over. After the removal of most of the 14,700 American and Filipino prisoners of war from the four islands forts, the Japanese did not devote substantial resources to the restoration of the harbor defenses. Over the next three years, American prisoners of war were used to collect steel scrap for the Japanese war effort and to restore some of the damaged coast artillery to service.

Retaking the island fortresses 1945



American paratroopers are dropped on Corregidor Island, February 15, 1945. (US Army, NARA)

The American forces returned to the Philippines in late 1944. The bulk of the Japanese forces in the islands were the elements of the 14th Army, now commanded by General Tomoyuki Yamashita. Yamashita's plan was to delay the Americans on Luzon as long as possible by fighting a strategic withdrawal into the mountainous areas of the island. However, his Navy counterpart, Rear Admiral Sanji Iwabuchi, planned to hold the city of Manila. He also prepared his defenses around Manila Bay, centered again on the fortified islands. Somewhat cleaned up by the American prisoners, only a few of the weapons were operable. The islands were garrisoned by elements of the Imperial Japanese Navy who brought some additional artillery and AA weapons. By 1945 the Japanese had over 5,000 men on Corregidor, 370 on Carabao Island, 400 men on Caballo Island, and 65 men at Fort Drum. Each island was supplied with provisions, and ammunition for small arms, but not much in the way of artillery. The typical Japanese strategy was to tunnel in and force the Americans to come and get them – their task was to hold the islands to the last man. By 1945 the Americans had seen this defensive tactic many times: the lessons they had learned would be applied in the Philippines campaign.



As a result of Yamashita's strategy, the Luzon invasion forces of the 6th US Army under General Walter Krueger had little difficulty landing and securing a beachhead at Lingayen Bay on January 9, 1945. Pushing cautiously forward, Krueger's troops reached the outskirts of Manila City by the end of January. Early on, the effort to clear the city went well, but soon the Americans were locked in a bitter battle for the southern half of the city that would last well into March. While the Manila battle raged, plans were made to retake the fortified islands. With Yamashita's withdrawal to the north, the islands were of little strategic value, but they were needed in order to open up the use of Manila Bay for Allied shipping. And, it was a matter of pride.

The American assault on Corregidor

The American assault on Corregidor was by an airdrop by the 503d Parachute Regiment supported by an amphibious assault by a reinforced battalion of the 34th Infantry Regiment from Mariveles. Since January 22, the islands had been routinely bombarded by Allied air forces. The air bombardment was stepped up in February, augmented by naval bombardment from the cruisers and destroyers of Task Group 77.3. The 503d were on Mindoro Island the morning of February 16. The only area large enough and level enough to act as a target for the drop was the parade ground area of Topside. It was hoped that the Japanese garrison (underestimated by the Americans at only about 800 men) would not expect the airborne attack and they would be caught by surprise. The first paratroopers were on the ground by 0830, and met only sporadic rifle and machine-gun fire, as only a few Japanese were in position to resist the landing. They were quickly driven off, and the landing area was consolidated by 1000. Their mission was to secure Topside in preparation for the second lift of paratroopers and provide fire support for the amphibious landing. The first wave was able to accomplish this, but they also sustained numerous injuries



The gun crew of Battery Geary operating the 12in. mortars under fire on May 2, 1942. At 1030 a Japanese 240mm howitzer projectile penetrated the reinforced concrete of the central magazine and detonated the ammunition stored there. The resulting explosion obliterated the magazine and destroyed all eight mortars.



American landing and attack on Corregidor, February 16 to March 1, 1945.



General MacArthur inspects the entrance to Malinta Tunnel, March 2, 1945. (US Army, NARA)

and a number of paratroopers did not land on the Topside landing zone.

The 3d Battalion, 34th Infantry left Mariveles in 25 LCMs at 0830. Taking a circuitous route around the west end of Corregidor, the first boats hit the south beach at 1030. Surprisingly, there was no opposition as the first four waves came ashore, but as the fifth wave came in, Japanese machine guns opened up from several locations. As vehicles moved ashore some hit buried mines and were destroyed. Despite the obstacles, the men of the 34th Infantry moved ahead and secured the top of Malinta Hill by 1100.

The surprise hoped for by the simultaneous assaults had been achieved and the Americans had secured their early objectives with very few combat casualties. By a stroke of luck, the Japanese commander on the island had been killed during the initial drop in a skirmish with landing paratroopers. Leaderless, the Japanese defenders were divided into groups that fought on their own from their isolated and widely separated strongpoints. The second lift of paratroopers began landing at 1240 and better conditions resulted in fewer injuries than during the first lift. As the individual infantry companies began to fan out to secure Topside, they soon found Japanese strength was concentrated west and south of the drop zones. Additional drops were cancelled; other troops were brought ashore by landing craft.

Now that the landing force was on the island, the "Rock Force" operation commanded by Colonel George M. Jones of the 503d became a large-scale mop-up operation. The units on Topside began to systematically destroy the Japanese positions. Defenses, once located, were softened up with air bombardment or naval support, then the infantry would attack. If needed, 75mm howitzer fire, hand grenades, or flamethrowers were used in close support. Finally, demolition experts would block the entrance to tunnels or caves with debris. This process continued for the next four days as the American forces cleared the main part of the island. Occasionally the Japanese would counterattack, sometimes in reckless uncoordinated "banzai charges" that would only result in heavy casualties to the attackers. The western half of the island was secured by February 23.

Jones now turned his attention to Malinta Hill and the Tail. Since the hilltop had been secured during the initial landings on the 16th, the infantrymen had spent the time beating off a long series of Japanese counterattacks. Slowly over the next few days, they coordinated efforts to clear out Bottomside and Middleside, aiming to connect with the paratroopers on Topside. They were finally able to establish positions to watch the entrances to the Malinta Tunnel by the 21st. That night at 2130 a tremendous explosion rocked the island as the stockpile of ammunition in the tunnel was set off by the Japanese. Additional explosions racked the hill during the next two nights, effectively eliminating the Japanese defenders in the tunnel. The most serious fighting erupted during the effort to clear the remaining area east of Malinta Hill. Several significant firefights erupted during the period February 22–26. Slowly closing in on Kindley Field, the Japanese resistance collapsed with the demolition of the Japanese stockpile of ammunition in an underground arsenal in the Naval Intercept tunnel at Monkey Point just as the Americans were overrunning the position, causing significant casualties to both sides.

The remains of Battery Geary at Fort Mills, Corregidor Island, in an image taken on March 6, 1945. This two-pit 12in. mortar battery was totally destroyed by the penetration of a Japanese 240mm shell into the central transverse magazine in May 1942. (NARA Still Pictures SC-335467)





US Army engineers place a temporary pipeline from the beach to the top of Battery Craighill to allow fuel oil to be pumped into the mortar emplacement. (NARA Still Pictures SC-266212, taken April 5, 1945)

On March 2, after the island was deemed to be secure, General MacArthur returned to Corregidor. A simple yet impressive flag-raising ceremony was held using the garrison flagpole, which still stood on the Topside parade ground. Colonel Jones stepped forward, saluted MacArthur, and reported: "Sir, I present to you Fortress Corregidor."

Retaking Caballo, El Fraile, and Carabao islands

During the month of February troops began to comb the Cavite Province to secure the area from the few remaining stragglers. The capture of Ternate on March 2 effectively ended the fighting there. Now all that remained was to clear Caballo Island, Carabao Island and Fort Drum. The bay had been considered safe for Allied shipping since the day of the assault on Corregidor on February 16. Although the Japanese garrisons on these islands posed no threat to American shipping due to lack of operational artillery, they still were a problem with the possibility of machine-gun fire any time a vessel passed near their shores.

On March 19 a platoon was sent to reconnoiter Caballo Island. Discovering a strong Japanese defensive position on the high ground of the small island, a general assault was ordered for March 27. Following an intense air, naval, and artillery bombardment, an assault group of the 2d Battalion of the 151st Infantry came ashore to no opposition. By the end of the day the entire island had been secured except for the pits and tunnels of Battery Craighill in the mid-section of the island. The position was well screened from artillery fire, and despite



US Army soldiers cross a specially built gangway onto the top of Fort Drum, El Fraile Island, under Japanese rifle fire, while other troops await their turn. (NARA Still Pictures SC-266266, taken April 13, 1945)



A combination of fuel oil, explosives, and its own ammunition results in a massive explosion at Fort Drum, April 13, 1945. (NARA Still Pictures SC-266258)

repeated efforts, could not be cleared of the defenders. The engineers of the 113th Engineers, 38th Division suggested pumping up a mixture of oil and gasoline from a landing craft through a pipeline and into a ventilator shaft atop the battery. The pipe was duly laid and on April 5 2,500 gallons of fuel were pumped through the shaft, then ignited with white phosphorus mortar shells. A flash fire ensued followed by several explosions. The procedure was repeated on the next two days, with explosives lowered into the shaft on the 7th, resulting in an enormous explosion. On April 13 a patrol entered the tunnel, killed the lone remaining Japanese defender, and reported the position to be clear.

The next target was El Fraile Island. The crew of an American PT boat discovered the Japanese garrison there during an unscheduled reconnaissance in late February. Pounding Fort Drum by air bombardment and point-blank naval fire proved to be as useless as the Japanese bombardment had been in 1942. The plan for Fort Drum, whose only entrance was through its sally port, was similar to that used at Battery Craighill on Caballo Island – get troops atop the structure and feed fuel and demolition charges down through the ventilator shafts. The engineers rigged a drawbridge-like ramp on the conning tower of an LSM and on the morning of April 13 a company of the 151st Infantry dashed on to the top of Fort Drum. While the infantry covered all the openings to the interior, the engineers followed across the ramp with an oil line and demolition charges. Despite a break in the line, some 3,000 gallons of fuel were pumped into an open vent, and a demolition charge with a 30-minute delayed fuse was lowered into the shaft. Once the task was completed, the men raced back onto the boats and the tiny fleet pulled back. The initial explosion at 1030 was disappointing. As the officers gathered to discuss what to do next, a second explosion at 1045 rocked the structure as the burning fuel apparently ignited the powder in the 6in. battery's magazine. Great clouds of smoke and flame shot skyward; a series of violent explosions threw steel plates and blocks of concrete hundreds of feet into the air and up to a thousand yards out into the bay; smoke and flames poured from every vent, gun port, and the sally port. Fires and other explosions continued until late afternoon and the fort burned for two days. A reconnaissance of the fort's interior was not attempted until April 18, which counted 69 dead bodies.

The final island that remained was Carabao Island just a mile off the Cavite shore. Two days of air and naval bombardment preceded the attack. Troops of the 151st Infantry landed on April 16 to no opposition. Expecting a difficult fight in Fort Frank's emplacements and tunnels, the landing party was surprised to find that the island's 350 Japanese defenders had abandoned the island. A search of the island showed it to be inhabited by only one living creature, a badly shaken pig. The island forts of Manila Bay were now back in American hands.



Battery Craighill, Fort Hughes, September 1945. (Exhibit from the Case Report, US Army)

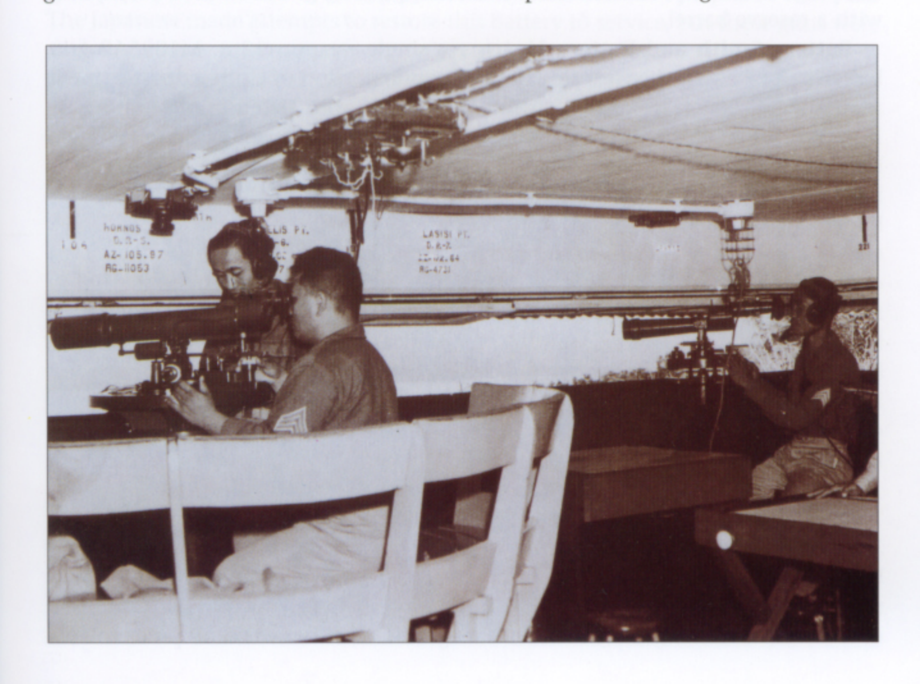
A guide to the gun batteries of the Manila Bay defenses

Fort Mills (Corregidor Island)

Battery Cheney is located on the southwest side of the Topside portion of Corregidor. The battery's two M1895MI 12in. guns on M1901LF disappearing carriages had a field of fire to the west over Corregidor's steep cliffs and over the South China Sea. The emplacement was a standard disappearing-gun battery design used during the Taft period. The battery saw limited action throughout the 1942 campaign due to its field of fire and exposure to enemy fire from Bataan. Their crews made the guns unserviceable before surrendering to the Japanese. The Japanese made attempts to restore this battery to service, but these guns were never fired in the 1945 campaign. The battery received further damage in the retaking of Corregidor. The emplacement and both of the disappearing guns survive today, while its reserve barrel is thought to be in the Bottomside area, near the chapel.

Battery Wheeler is located on the south side of the Topside portion of Corregidor to the east of Battery Cheney. The battery's two 12in. M1895MI guns had a field of fire to the southwest. The emplacement's design was standard. The battery's guns fired counter-battery throughout the 1942 campaign and suffered damage due to aerial and plunging artillery bombardment. The guns were heavily damaged by their crews before the surrender to the Japanese, but the American prisoners of war under the direction of the Japanese were able to restore the No.2 gun by cannibalizing the No.1 gun. The Japanese used the battery as a strongpoint during the 1945 campaign and it suffered extensive damage. The emplacement and No.2 gun survive today along with the barrel from destroyed No.1 gun and a reserve barrel.

Battery Crockett is located on the south side of the Topside portion of Corregidor to the east of Battery Wheeler. The battery's two 12in. M1895MI guns had a field of fire to the south. The emplacement's design followed that



Observers of Battery E, 91st Coast Artillery Regiment track targets in an observation station. This Philippine Scout unit manned Battery Grubbs at Fort Mills, Corregidor Island, throughout the 1942 siege. (NARA Still Pictures SC-118544, taken April 21, 1941)



Battery Hoyle was a simple emplacement for a 3in. M1903 gun on M1903 barbette carriage at Fort Frank, Carabao Island. Here a Philippine Scout unit carries out target practice, in a photograph from a series taken by a non-commissioned CAC officer in 1930. (Courtesy Karl Schmidt collection)

of batteries Wheeler and Cheney. The battery fired counter-battery throughout the 1942 campaign and suffered bombardment damage. No.1 gun's recoil cylinder was hit with a Japanese 240mm shell during the 1942 campaign and the gun was permanently put out of service. An aerial bomb pierced the No.2 gun's loading platform floor, but the powder magazine did not explode. The Japanese restored the No.2 gun to service, but it was never used in the 1945 campaign. The emplacement and both disappearing guns survive today along with a reserve barrel.

Battery Smith and **Battery Hearn** are single-weapon 12in. M1895A2 gun batteries located on the west side of the Topside portion of Corregidor, the most modern seacoast weapons to be installed in the Harbor Defenses of Manila Bay. Each battery had one 12in. gun on an M1917 "long-range" barbette carriage, built as two separate single emplacements featuring open gun blocks, but with buried reinforced-concrete magazines, plotting, and power facilities. The two batteries had a 360-degree field of fire, but mainly to the west over the South China Sea. Due to the distance between the emplacements, the battery was quickly reorganized into separate batteries (completed officially in 1937). Both batteries saw limited use in the 1942 campaign due to their long-range importance and exposed positions. The Americans made the guns unserviceable before they surrendered to the Japanese. American prisoners of war restored Battery Hearn's gun to service, but this gun was never used in the 1945 campaign. The batteries received further damage in the retaking of Corregidor in 1945. Both of these weapons and a reserve barrel survive today.

Battery Way is located near the center of the Topside portion of Corregidor. The battery's four 12in. M1890MI mortars on M1896M1 carriages had a 360-degree field of fire, but mainly to the west over the South China Sea. The battery consisted of just one simple pit and adjacent magazines compared to the standard two-pit arrangement of the Taft period. Battery Way and Battery Geary on Fort Mills were originally built with magazines that lacked bomb-proof covers.

Additional earthen and concrete protection was added in 1914. The battery was out of service when the 1942 campaign began and the US Army Mapping Service occupied its magazines. Battery Way was not returned to service until April 29, 1942 when enough trained manpower had become available to restore three of the four mortars. Two mortars were put out of service by Japanese shelling, but the remaining mortar continued to fire until its breechblock fused on May 6. The Japanese were able to restore this one mortar to service, but it never fired in the 1945 campaign. The emplacement and all four mortars survive today.

Battery Geary is located on the southeast side of the Topside portion of Corregidor to the north of Battery Crockett. The battery's eight 12in. mortars had a 360-degree field of fire, but mainly to the west over the South China Sea. The battery consisted of the standard two-pit arrangement, but Pit A had older M1890MI mortars while Pit B had more modern M1908 mortars. In the 1942 campaign, Manila Bay's mortar batteries played an important role due to their ability fire into the ravines of Bataan and Cavite where the Japanese had located their artillery. However, the lack of effective fire control, the limited amount of HE ammunition, and exposed fixed positions imposed a severe handicap on their use. As with Battery Way, additional concrete and earthen protection was added to Battery Geary in 1914. The constant Japanese shelling during the 1942 campaign wore away this protection, allowing a 240mm howitzer shell to penetrate the magazine. The explosion of 1,600 62 lb powder charges demolished Battery Geary's central traverse, wrecked all eight mortars, collapsed the parapet, and left Fort Mills' most effective battery for land defense a complete ruin. The interest of the Japanese occupiers at Battery Geary extended only to scrap removal. The ruined emplacement and parts of the eight mortars survive today.

Battery Grubbs is located on the western side of the Topside portion of Corregidor. The battery's two 10in. on M1895M1 guns on on M1901LF disappearing carriages had a field of fire to the north and west over the North Channel. As this channel between Corregidor and Bataan is narrow, there was no need for a larger-caliber gun at this location. The emplacement was a standard disappearing-gun battery design. The battery saw limited action throughout the 1942 campaign due to its exposure to Japanese artillery fire from Bataan. The battery was not manned until April 9, 1942 when Bataan fell to the Japanese and was quickly abandoned as both guns became unserviceable by April 16 that year. The Japanese made attempts to restore this battery to service, but these guns were



Drill on a 12in. disappearing gun at Battery Wheeler. The shell is being rammed home while the powder detail stands by with a tray of powder bags. The date of this image is unknown. (Courtesy Glen Williford Collection)

never fired in the 1945 campaign. The emplacement and both of the disappearing guns plus reserve barrel survive today.

While not part of the permanent Harbor Defenses of Manila Bay, one 8in. M1888MIII gun on an M1918 barbette carriage was dismounted from its railway car and emplaced on a simple concrete gun block just east of the entrance to the Malinta Tunnel on Fort Mills. The gun was destroyed by Japanese bombing after firing a few proof rounds. This was known as **Battery RJ-43**, for its location near road junction 43.

Battery Morrison is located on the north side of the Middleside section of Corregidor. The battery's two 6in. M1905 guns on M1905MII disappearing carriages had a field of fire over the North Channel and its controlled minefield. The emplacement was a standard disappearing-gun battery design. The battery saw limited action throughout the 1942 campaign due to its field of fire and exposure to Japanese artillery fire from Bataan. The battery was first manned on April 9, 1942 when Bataan fell to the Japanese, but heavy shelling on April 12 damaged both guns permanently. The Japanese made no attempts to restore this battery to service, but did use these guns as a source of parts for Battery Ramsay's guns. The emplacement and both of the disappearing guns plus a reserve barrel survive today.

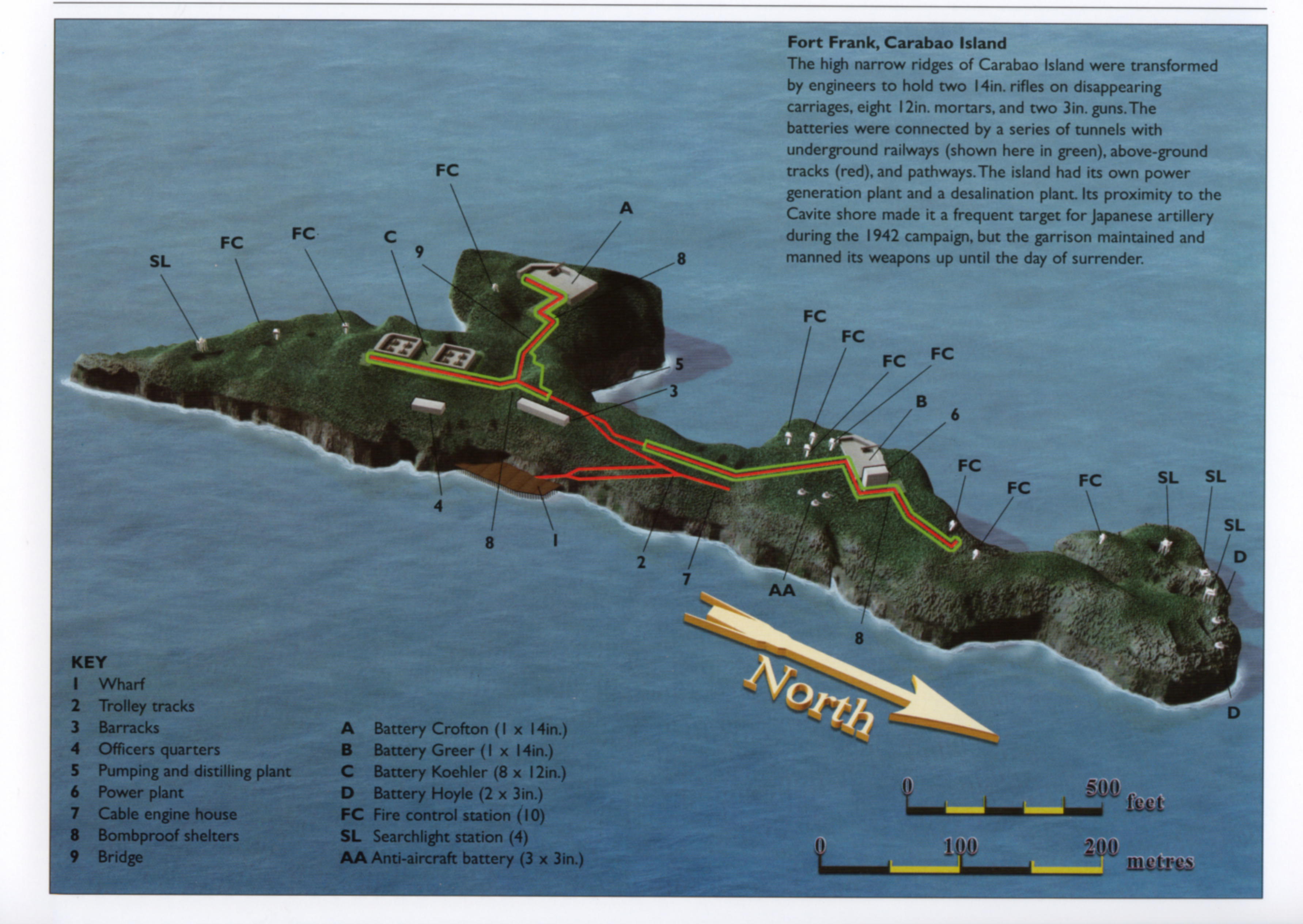
Battery Ramsay is located on the south side of the Middleside section of Corregidor. The battery's three 6in. M1905 guns on M1905MII disappearing carriages had a field of fire over the South Channel and its minefields. The emplacement was similar to Battery Morrison except for having three gun pits and two magazines. The battery saw no action throughout the 1942 campaign due to its field of fire. The Japanese restored Battery Ramsay's three guns to service, but these guns were never fired in the 1945 campaign. The reinforced magazines of Battery Ramsay proved to be no match for the heavy bombs of the US Army Air Force during 1945. Both magazines between the three guns were completely destroyed after direct bomb hits. Only the battery's parapet remains today along with most of No.3 gun and parts of No.1 and No.2 guns.

Battery James is located on the north side of the Middleside section of Corregidor. The battery's four 3in. M1903 guns on M1903 barbette mounts had a field of fire over the North Channel and its controlled mine field. The emplacement was a standard rapid-fire gun battery design with each gun position having a magazine on a lower level. The battery saw limited action throughout the 1942 campaign due to its limited range and exposure to enemy fire from Bataan. Heavy shelling from Bataan on April 20, 1942 badly damaged the battery. The Japanese were able to restore one 3in. gun to service and were in the process of relocating the other guns to more protected positions when Corregidor was retaken in 1945. The overgrown emplacement without any guns survives today.

Battery Maxwell Keyes is located on the south side of the Tail section of Corregidor. The battery's two 3in. M1903 guns on M1903 barbette mounts had a field of fire to the southeast. The emplacement followed a very simple design consisting of two gun blocks and a single sunken magazine. The battery saw limited action throughout the 1942 campaign due to its location. The Japanese did not use this battery in the 1945 campaign. The emplacement without any guns survives today.

Battery Alonso Cushing is located on the south side of the Topside section of Corregidor on the South Shore Road. The battery's two 3in. M1903 guns on M1903 barbette mounts had a field of fire to the south. The emplacement followed a very simple design consisting of just two gun blocks. The battery saw limited action throughout the 1942 campaign due to its location. Their crews sabotaged the guns. The Japanese did not use this battery in the 1945 campaign. Today, both emplacements are intact, but no guns survive.

Battery Guy B. Hanna is located on the far west side of the Topside section of Corregidor. The battery's two 3in. M1903 guns on M1903 barbette mounts


Fort Frank, Carabao Island
The high narrow ridges of Carabao Island were transformed by engineers to hold two 14in. rifles on disappearing carriages, eight 12in. mortars, and two 3in. guns. The batteries were connected by a series of tunnels with underground railways (shown here in green), above-ground tracks (red), and pathways. The island had its own power generation plant and a desalination plant. Its proximity to the Cavite shore made it a frequent target for Japanese artillery during the 1942 campaign, but the garrison maintained and manned its weapons up until the day of surrender.
KEY
1 Wharf
2 Trolley tracks
3 Barracks
4 Officers quarters
5 Pumping and distilling plant
6 Power plant
7 Cable engine house
8 Bombproof shelters
9 Bridge
A Battery Crofton (1 x 14in.)
B Battery Greer (1 x 14in.)
C Battery Koehler (8 x 12in.)
D Battery Hoyle (2 x 3in.)
FC Fire control station (10)
SL Searchlight station (4)
AA Anti-aircraft battery (3 x 3in.)
North
0
500
feet
0
100
200
metres
SL
FC
FC
C
9
FC
A
8
5
3
4
8
1
2
7
AA
FC
FC
FC
FC
B
6
8
FC
FC
FC
SL
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had a field of fire to the north and west. The emplacement followed a very simple design of two gun blocks connected by a concrete magazine. The battery saw limited action throughout the 1942 campaign due to the exposed position to Bataan. The guns were neutralized by Japanese shelling and sabotaged by their crews. Today, part of emplacement has fallen down the cliff side onto the beach. No guns survive today.

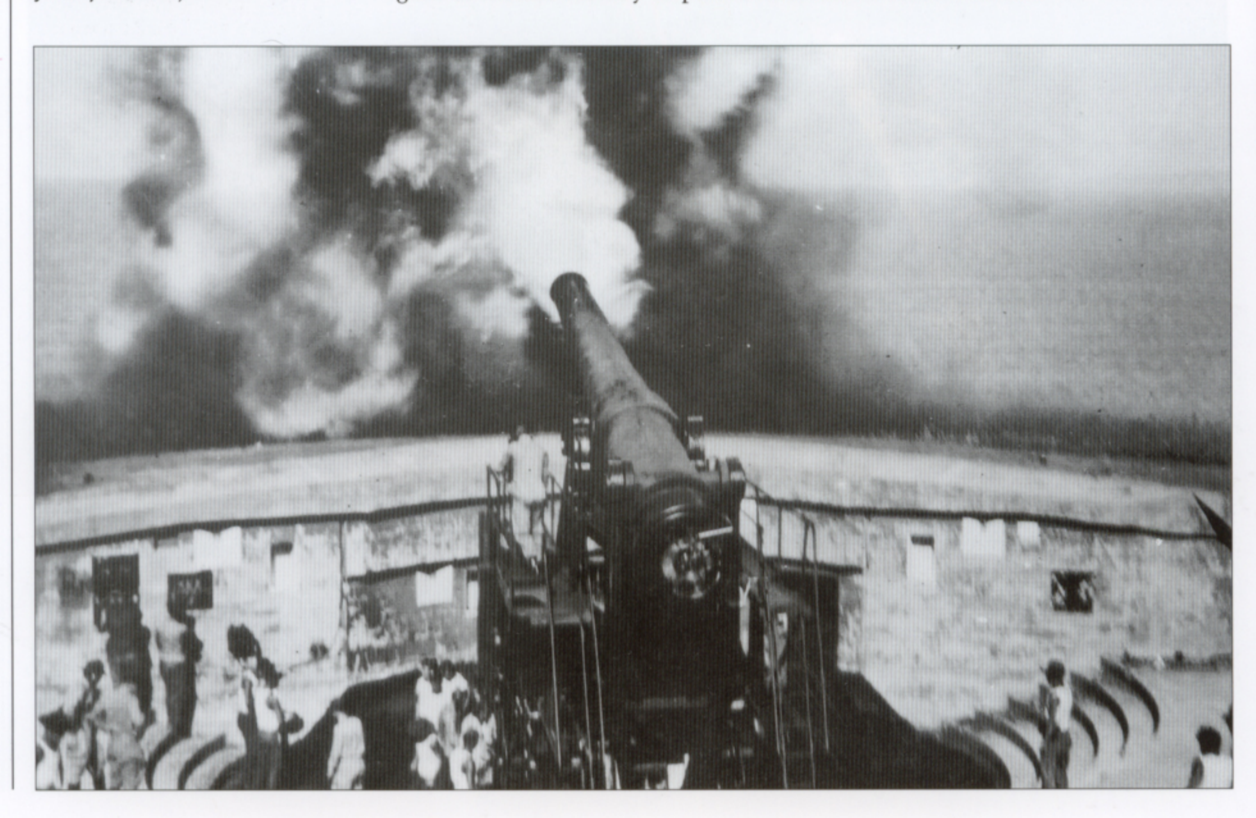
Mobile and anti-aircraft batteries

The end of World War I brought a range of surplus weapons to the Harbor Defenses of Manila Bay, such as the 155mm GPF M1918 gun, the 3in. (75mm) M1917 gun, and the 37mm M1916 gun. Provision for anti-aircraft defense was made by constructing emplacements for the fixed 3in. M1917 gun, as well as heavy and light machine gun positions. Only two 3in. M1917 guns were actually installed, so it was not until the late 1930s that the island forts received anti-aircraft protection from mobile 3in. M3 guns on M2 mounts.

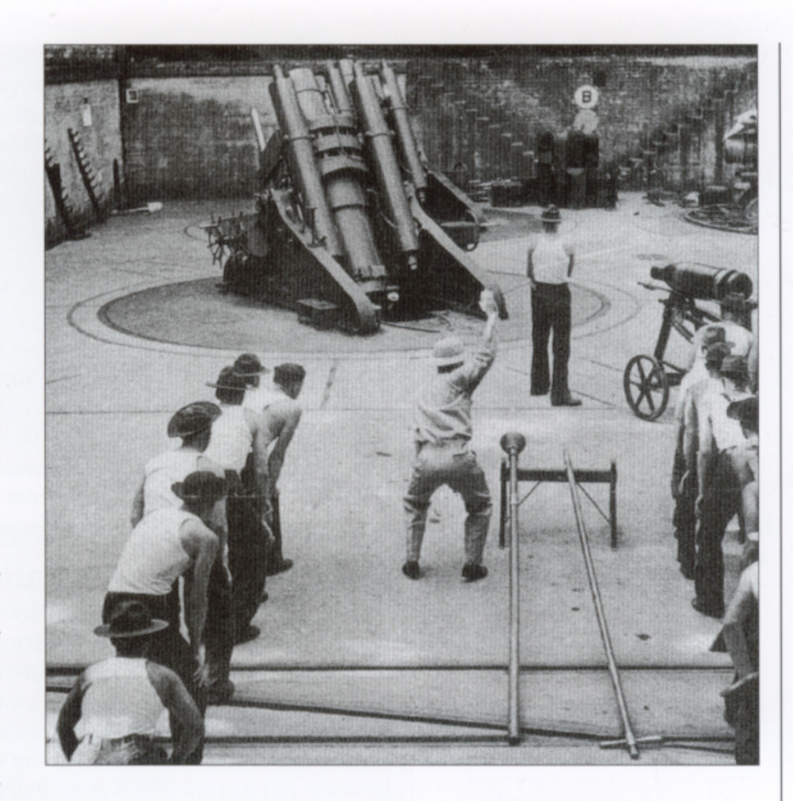
155mm GPF gun batteries

The 155mm gun was adopted in large numbers by the US Army from the French during World War I. Many of the US Army Coast Artillery units that were sent to Europe as field artillery were equipped with the 155mm gun. Upon returning to the US, some of these units retained this weapon for use in a coast defense role. The Harbor Defenses of Manila Bay received their share of surplus World War I 155mm GPF M1918 guns on M1918 carriages along with their prime movers. The exact number of 155mm guns shipped to the island forts is not clear: reports range from 24 to 37 guns. This confusion stems from the 1942 campaign where batteries were shifted around Corregidor and Bataan. As the Japanese attacks focused on fixed batteries, the 155mm guns had to be moved frequently. This resulted in the practice of designating roving batteries by the name of their current commanding officer, causing further confusion on battery names. It is known that Fort Hughes had two 155mm guns and Fort Frank had four 155mm guns. The Harbor Defenses of Manila Bay used 155mm guns as mobile artillery or placed them on Panama Mounts.

Battery Greer carries out target practice at Fort Frank, Carabao Island. This battery mounts a 14in. M1907M1 gun on an M1907 disappearing carriage. (NARA Still Pictures SC-108149, taken January 24, 1933)



Panama Mounts, named after the Panama Canal Zone where they were first installed, were simple emplacements that allowed the 155mm gun to be effectively used in a coast artillery role. The mount consisted of a low concrete pedestal at the center of which the 155mm carriage's axle rested on a turntable. Around this pedestal was an outer ring of concrete with a curved steel rail embedded on top, on which the twin trails of the carriage rested. This allowed for a quick 360-degree traverse (sometimes this was built for 180 and 240 degrees). The gun could be moved into position on the Panama Mount in less than a day. This meant that unless the fort's defenses were on alert, the 155mm gun was kept in a gun shelter, which was basically a garage. Construction of Panama Mounts did not begin until the late 1930s and continued up to the end of the 1942 campaign. One unique 155mm emplacement was **Battery Monja**, located on the South Shore Road of Corregidor. Battery Monja was a one-of-a-kind casemated position mounting a specially modified 155mm gun. This battery, though hit several times during the 1942 campaign, stayed in service to the end. The barrel of this gun became so worn by the end of campaign that its projectile could be seen tumbling in flight.

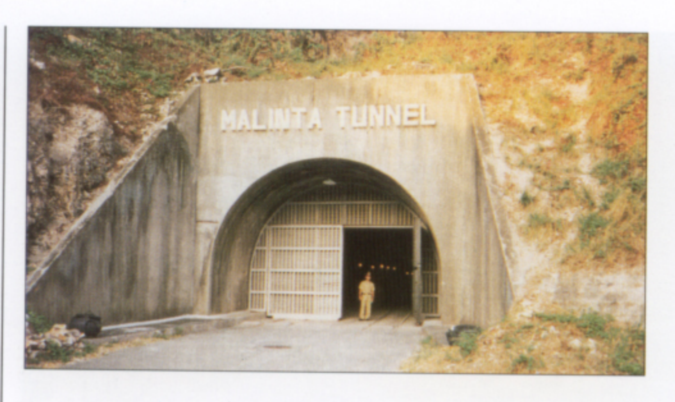


Battery Geary mortar practice, in the 1930s. Pit B contained four 12in. M1908 mortars on M1908 morar carriages. By the end of May 1942, this pit was completely destroyed. (NARA Still Pictures)

During the 1942 campaign, the 155mm guns in fixed positions became exposed to Japanese bombardment, so roving 155mm batteries with one or two guns were formed. These guns would be emplaced in concealed positions, fire 10 to 20 salvos of counter-battery, and then move before their position was located. After the campaign, most of the 155mm guns were shipped to Japan as scrap, as they were damaged either by shellfire or demolished by their crews. Today, there are no surviving 155mm guns on the island forts. Until the 1970s, three badly damaged 155mm guns could be seen on the dock of Fort Frank, but today they are gone.

3in. anti-aircraft gun batteries

The advent of military aviation during World War I caused the US Army Coast Artillery Corps to add anti-aircraft batteries to coast defense posts throughout the US and overseas bases. These anti-aircraft defenses were the 3in. M1917 guns, which were a derivative of the 3in. M1903 coast artillery weapon, mounted on an M1917 barbette carriage in a fixed concrete emplacement. Eighteen gun blocks for these 3in. M1917 guns were constructed for the Harbor Defenses of Manila Bay during 1917–21, but only two of these guns were ever mounted, namely at the Morrison Hill position on Fort Mills. These two 3in. M1917 guns were reinstalled on Fort Drum in 1934 and replaced in 1941 by mobile 3in. anti-aircraft guns. Instead of fixed anti-aircraft guns, the fortified islands received 32 mobile 3in. M3 guns on M2 mounts. Supporting these anti-aircraft guns were mobile 60in. searchlights, and 0.50-cal. machine guns in towers and ground emplacements. These batteries played an important role during the 1942 campaign, forcing Japanese bombers to fly at higher altitude. Most of these batteries used the powder time train fuse which limited their range to 8,300 yards, rather than the more modern mechanical fuse which allowed a greater range. Only twelve 3in. M3 guns remained in service by the end of the 1942



The East Entrance to the famous Malinta Tunnel (as rebuilt in the 1960s) at Fort Mills, Corregidor Island. (Terrance McGovern Collection)

campaign and their crews demolished most of these guns. Today, there are no surviving 3in. anti-aircraft guns on the island forts. The only known remains are the base of the M2 mount in an earthen emplacement at Battery Boston, near Battery Wheeler.

The 3in. M3 guns were grouped into eight batteries of four guns. Fort Mills had six batteries (one battery was detached to Bataan but returned in 1942 without its guns), Fort Frank and Fort Hughes had one battery each. In 1941, these batteries were deployed into wartime positions and earthen emplacements were constructed. Concrete positions were built to protect each battery's M-1 Height Finder and M-4 Director which provided targeting information to each gun through electrical data transmission cables. Also, sound locators and early radar equipment assisted targeting.

Fort Hughes (Caballo Island)

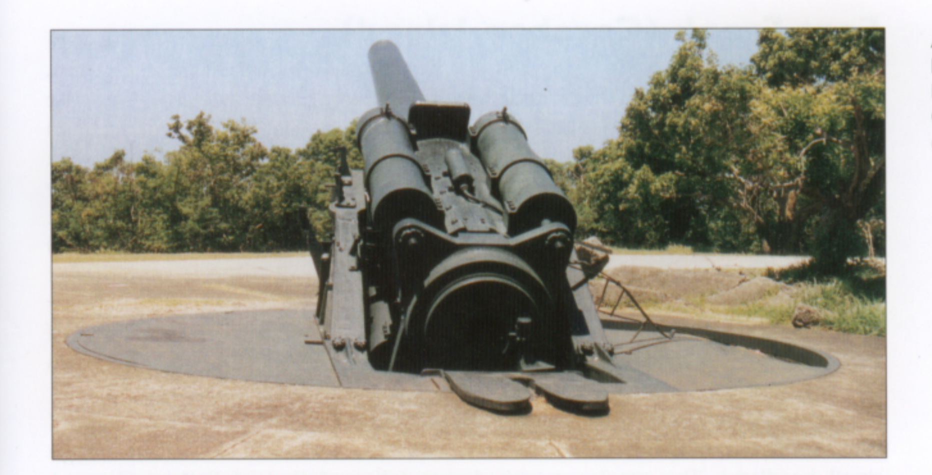
Battery Gillespie is located on a 250ft cliff on the narrow western end of Caballo Island. The design of Gillespie's emplacement reflects the site's restrictions by placing the magazines on the lower level while a standard 14in. emplacement would have had the magazines located adjoining the loading platform. The battery's single 14in. M1910MI gun on an M1907MI disappearing carriage had a field of fire to the southwest making the gun useless in the 1942 campaign. The Japanese did not use the battery in 1945. Battery Gillespie survived the war and the later conversion to a harbor radar station. The carriage pit was filled with concrete when the radar station was installed. The radar station has been abandoned but the emplacement and gun survive today.

Battery Woodruff is located in the middle of Caballo Island with its single 14in. M1910 gun's field of fire to the south and east. The emplacement design had two levels but the magazine was adjacent to the loading platform. Due to construction flaws, the gun was condemned before World War II, but did fire at targets during the 1942 campaign. The Japanese did not use this battery in 1945. American bombs destroyed the battery commander's station in 1945. The battery now serves as a naval storehouse. The emplacement and gun survive today.

Battery Craighill is located in the central part of Caballo Island. The battery's four 12in. M1912 mortars on M1896MII mortar carriages had a 360-degree field of fire, but mainly to the west over the South China Sea. Battery Craighill's emplacement was designed for two mortar pits, each containing only two mortars. A high parapet completely surrounded the pits with access through an adjacent tunnel and cableway. It was the last mortar battery to be constructed for the Harbor Defenses of Manila Bay and incorporated improved design features. US Navy sailors manned the battery during the 1942 campaign. The battery provided effective counter-battery against Japanese artillery on Bataan and Cavite. The battery continued to fire right up to the surrender of American forces. The Japanese never fired these mortars in the 1945 campaign, but used the battery as a strongpoint in 1945. An oil-gas mixture was pumped via a portable pipeline into the battery to set the battery complex ablaze and to incinerate the Japanese defenders. Today, Battery Craighill is the most fascinating of the harbor defense, as it has changed very little since

Topside Barracks, April 1996. (Terrance McGovern Collection)





A 12in. M1895A2 gun on an M1917 long-range barbette carriage at Battery Hearn, Fort Mills, Corregidor Island, April 1996. (Terrance McGovern Collection)



A 12in. M1895M1 gun on an M1901 disappearing carriage in the loading position. This is the No. 2 position, Battery Crockett at Fort Mills, Corregidor Island. (Terrance McGovern Collection, April 1996)

1945. The remains of war, such as shells, clothing, human bones, rations, etc. can still be found within the battery. The emplacement and all four mortars survive today.

Battery Leach was located on the eastern side of Caballo Island. The battery's two 6in. M1908 guns on M1905MII disappearing carriages had a field of fire over the South Channel and its minefields. The emplacement was similar to Battery Morrison. The battery saw limited action throughout the 1942 campaign due to its field of fire. The battery was fully operational at the surrender of American forces. Like Battery Ramsay on Fort Mills, Battery Leach's magazine exploded due to aerial bombing by the US Army Air Force in 1945. Only a few pieces of the emplacement remain today, as a building now occupies the location of No.1 gun. The barrel of No.2 gun survives today.

Battery Fuger was located on the eastern side of Caballo Island, just above Battery Leach. The battery's two 3in. M1903 guns onM1903 barbette mounts had a field of fire to the east. The emplacement followed a simple design of two gun blocks and a small traverse magazine. The battery saw limited action throughout the 1942 campaign due to its location. The Japanese repositioned Battery Fuger's two 3in. guns to tunnels on Corregidor. For many years, one of these guns was the only surviving 3in. gun on the fortified islands as it was partly buried on the steep south side of Malinta Hill: however, in the last ten years it has disappeared. Today, Battery Fuger's emplacement has been bulldozed leaving only a few sections visible.

Fort Frank (Carabao Island)

Battery Greer is located on the northern end of Carabao Island with a single 14in. M1907MI gun on an M1907 disappearing carriage which had a field of fire to the northwest. Unlike the 14in. emplacements on Fort Hughes, Battery Greer and its sister Battery Crofton had increased overhead protection, which left only the gun and loading platforms exposed. This design feature reflects the concerns over the island's narrowness and its exposure to the overshadowing hills on the mainland. The magazines and support functions were built underground adjoining the gun platform. On the battery's eastern flank was the fort's underground power plant and running due south was the battery's long access tunnel. The battery was not used during the 1942 campaign due to its field of fire, but did provide a source of parts for Battery Crofton's gun. The gun survived the war, but not the scrap scavengers of the 1970s, as a result of which the gun has disappeared.

Battery Crofton, a battery for a single 14in. M1907MI gun on an M1907 disappearing carriage, is located on the southwest end of Carabao Island on a small headland. The emplacement's design followed that of Battery Greer. A bomb-proof tunnel links the battery to a bridge, which connects into Battery Koehler's tunnel system. Battery Crofton's field of fire allowed for counter-battery at Japanese positions on Bataan during the 1942 campaign. Its gun crew made the gun unserviceable before surrendering to the Japanese. Despite being subject to heavy Japanese shelling whenever the gun went into action, the battery and gun survived the war. Scrap scavengers have removed both the gun and carriage, and some of the steel rebar from the emplacement.

Battery Koehler is located in the southern section of Carabao Island. The battery's eight 12in. M1908 mortars on M1903 barbette mounts had a 360-degree field of fire, but mainly to the northwest over the South China Sea. Battery Koehler's emplacement was designed for two mortar pits, each containing four mortars. A high parapet completely surrounded the pits with access through an adjacent tunnel system. The battery provided effective counter-battery against the Japanese artillery on Cavite and Bataan during the 1942 campaign. The battery was subject to heavy Japanese shelling whenever the mortars went into action. The battery's mortars were made unserviceable before surrendering to the Japanese. Battery Koehler was seriously damaged during the American bombardment, even though the Japanese abandoned the island during the 1945 campaign. Scrap scavengers removed all eight mortars during the 1970s and have started to remove the steel rebar in the emplacement.

Battery Hoyle was located on the northern end of Carabao Island. The battery's two 3in. guns had a field of fire to the north to protect the three searchlight emplacements on this end of Carabao. The emplacement was a very simple design of just two gun blocks. By 1942, both guns had been removed, one to Fort Mills and the other to Fort Drum. The gun moved to Fort Drum was placed behind the fort's cage mast in case an enemy vessel approached from the rear. In January 1942, a Japanese steamer approached Fort Drum, not realizing the 3in. gun had been emplaced. The gun engaged the target, hit the ship once before it retreated out of range. This engagement turned out to be the first enemy ship hit by US coast artillery since the American Civil War. The base of this gun still exists on Fort Drum and the gun blocks on Fort Frank survive today.



Battery Crockett and its two 12in. M1895MI guns on M1901 disappearing carriages in the loading position at Fort Mills, Corregidor Island. Note the collapsed battery commander station and shell holes on the loading platforms. (Terrance McGovern Collection, April 1996)



A badly damaged 12in. M1908 mortar on an M1908 mortar carriage lays trapped under the side wall of Battery Geary at Fort Mills, Corregidor Island. The explosion of the central transverse magazine in May 1942 threw this mortar here. (Terrance McGovern Collection, April 1996)

Fort Drum (El Fraile Island)

The 14in. M1909 guns in M1909 turret mounts at Fort Drum were unique among all the American fortifications built. **Battery Wilson** was the upper turret, while **Battery Marshall** was the lower turret, as each turret was considered a separate battery. These batteries were the most effective weapons possessed by the Americans during the 1942 campaign due to their ability to withstand aerial and artillery bombardment and at the same time fire on Cavite and Bataan. The turrets remained in action until being sabotaged just before Fort Drum surrendered. The Japanese never restored these turrets and the recapture of Fort Drum by the Americans in 1945 further damaged the batteries. Both turrets and four guns survive today and appear to be in excellent condition from the outside, but inside scrap scavengers have gutted them.

The secondary armament on Fort Drum consisted of four 6in. M1908MI guns in two unique casemates. **Battery Roberts** was located on the southern side of El Fraile Island. The battery's two guns had a field of fire over the Cavite shoreline. The emplacement was a unique two-level casemate with one gun mounted above the other. The battery was hit by Japanese artillery fire several times in 1942. The battery was sabotaged at the time of surrender in 1942, but restored by the Japanese using American prisoners. Battery Roberts was the target of an American light cruiser during the 1945 campaign causing the lower gun to be destroyed and the casemate's armor to be pierced in several places. The casemate survives but scrap scavengers have gutted the interior except for one barrel and its shield. **Battery McCrea** was located on the northern side of El Fraile Island. The battery's two guns had a field of fire over the South Channel and its minefields. The emplacement was a twin to Battery Roberts. The battery was protected from damage from Japanese artillery fire due to its orientation away from Cavite in 1942. The battery was sabotaged at the time of surrender in 1942, but restored by the Japanese using American POWs. Battery McCrea's magazines exploded during the 1945 campaign when Fort Drum was set on fire, destroying it. This internal explosion tore a hole some 15ft by 20ft in the upper deck of Fort Drum directly above Battery McCrea. Today, the exterior of the casemate survives along with the two gun shields.

An assessment of the defenses of Manila Bay

The 1942 and 1945 campaigns left the island forts in shambles. In September 1945 a board of officers, headed by Brigadier-General Homer B. Case, was appointed to evaluate the damage incurred by the Harbor Defenses of Manila and Subic Bay during the campaigns of 1942 and 1945. After surveying the forts at first hand and interviewing a number of American personnel from both the 1942 and 1945 campaigns, the board submitted a detailed and extensively illustrated report in October 1945. In reviewing the 1942 campaign, the board noted that the Japanese air bombardment had caused little material damage to the harbor defense weapons. The most damage was caused by the intense artillery bombardment in the weeks preceding the invasion of Corregidor. The board also noted that the American gun crews had rendered the remaining armament on the islands inoperable, with minor exceptions, before surrendering. The Japanese did not repair or salvage much during the course of their occupation. American bombardment and the efforts to retake the island caused more damage to weapons, and extensive structural damage to Batteries Craighill and Koehler, and to Fort Drum. For the most part, nearly all the artillery and most of the structures on the islands were a total loss. By the end of the war, the entire concept of fixed seacoast artillery defenses was being re-evaluated – and subsequently the United States itself abandoned seacoast artillery as a defensive system from 1948.

When the seacoast defenses of Manila Bay were designed during the period 1904–10, they were the state of the art based on the experiences of the previous decade of intensive construction in the United States. Indeed Fort Drum was a unique armored turret structure unlike any other built by the United States. The defenses featured integrated overlapping fields of fire of major-caliber



Battery Way at Fort Mills, Corregidor Island. (Terrance McGovern Collection, April 1996)

The Philippine War Memorial at Fort Mills, Corregidor Island. The water tank above the memorial was the site of heavy fighting between the Americans and Japanese during 1942. (Terrance McGovern Collection, April 1996)

weapons with secondary weapons that protected minefields. Together these defenses effectively closed the harbor entrance to hostile naval warships, whether they were attempting to penetrate Manila Bay or stage a raid.

However, developments in naval capital ship design and airplane design during the years leading up to and through World War I effectively outmoded many of these defenses, in some cases even before they were finished. By 1920



Fort Drum, El Fraile Island. The white tower is a modern aid to navigation. (Terrance McGovern Collection, April 1996)

several foreign battleships had effective ranges greater than any weapon in the defenses, except for the new 12in. weapons then under construction. The higher angle of fire of the main weapons on these ships also negated the protection afforded by the parapet of the disappearing gun and the mortar batteries, the main weapons on the islands. The emergence of the airplane as a military weapon made the exposed emplacements of the Manila Bay defenses open targets. Because of the limitations imposed by the Washington Naval Treaty and tight War Department budgets in the 1920s and 1930s, the United States did not modernize these defenses.

Concerns over the defensibility of the Philippines because of its distance from the United States and its closeness to Japan were raised in the 1920s and 1930s. Yet, in 1941 the United States military command decided to reinforce the island garrison as war with Japan grew more likely. While the antiquated seacoast fortifications successfully carried out their mission of preventing the Japanese Navy from accessing Manila Bay, the failure of the American and Filipino military forces to prevent the Japanese from landing a superior force on Luzon forced the American forces into a siege. Without a relief force from the United States, the defenders could only hold out until their supplies gave out. Significantly, the better-prepared island fortresses were the last to surrender. The artillery weapons survived repeated aerial bombardment remarkably well, despite their exposed positions. Only when siege artillery was moved to the Bataan shore were many of the weapons rendered inoperable. The island forts were also overburdened with non-essential personnel that consumed resources, but did not contribute to their defense. Once the Japanese landed forces on Corregidor, the land defenses proved to be lacking and the organization and leadership of American defenders poor. Finally the lack of adequate food and water, coupled with the exhaustive six-month campaign forced the surrender of the 15,000-strong garrison on Corregidor to a few thousand invading Japanese troops on May 6. The fortifications of Manila Bay were designed to deny the entry of warships into the bay and, while obsolete by the time of World War II, these defenses achieved their objective. Only when Luzon was captured by the Japanese and the island fortresses were subjected to aerial and artillery bombardment, especially by 240mm howitzers, did the fortifications fail.

The Japanese defense of these island forts was not much different to their defense of other Pacific islands. While they utilized the reinforced-concrete structures as defensive shelters, they made little use of the major weapons on the island, nor did they construct any major new defenses. Their plan was simple: hole up underground and make the Americans come and clear them out. The protected structures on Corregidor, Caballo, and Fort Drum just made that more difficult. In the end these island forts fell both in 1942 and in 1945 for the same reason all defended places fall – the defenders were facing a superior attacking force with no hope of reinforcements relieving them.

The fortified islands today

The Philippines received their independence in 1946 and the islands were officially relinquished to the Republic of the Philippines on October 17, 1947. The Philippine government declared Corregidor Island a national war shrine, while Caballo Island became a naval radar station, and El Fraile Island and Carabao Island were abandoned. A US Bataan-Corregidor Memorial Commission was formed in 1953 to build a war memorial on Corregidor. The commission's project received funding in 1962 and an American memorial was completed in 1968.

From the end of World War II until today, the island forts have basically remained as they were in 1945 – except for encroaching jungle growth and damage caused by scrap scavengers. Several contracts were drawn up with steel scrap firms to "clean up" the island forts. Some of the firms, especially at Fort Drum, took advantage of the situation and demolished parts of the fort to remove steel. Also, Filipino fisherman from Bataan and Cavite with very basic tools have attacked the surviving coast artillery and their supporting structures for every piece of steel that could be obtained to supplement their meager income. The two completely abandoned island forts, Frank and Drum, have suffered the most. At the end of World War II, Fort Frank retained two 14in. disappearing guns, eight 12in. mortars, and several other guns, but by the early 1970s not one of these weapons remained. This hunt for steel extends to the steel rebar and beams in the ceilings, floors, walls, and stairs of emplacements and buildings. Even with guards, Corregidor has not been spared the effects of scrap scavengers. Caballo Island has remained the most untouched island fort. This is due to the presence of a Philippine Navy ammunition storage depot on the island with armed guards and the need to receive permission to visit.

In an effort to preserve Corregidor's historic sites from destruction and to maintain it as a continuing tourist attraction, the Philippine government formed the Corregidor Foundation, Inc. in 1989 to take over the management of the island. Besides protecting the historic sites, the foundation hopes to attract more visitors to Corregidor by building resorts and expanding the range of tourist attractions, such as both Philippine and Japanese war memorials. It has rebuilt parts of the island's road system, restored its airfield, cleared back the jungle growth, built a new Corregidor Inn, replaced the aging tour buses, and upgraded the island's ferry service. Today's visitors are mainly Japanese and American tourists, who are drawn to the island due to its famous battles of 1942 and 1945.

Visiting Corregidor can be easily arranged in Manila. There is a ferry, which goes out to the island daily, and the island has a hotel for overnight stays. There are also regular tourist tours to Bataan. Arranging to visit the other island forts is a little more difficult. Permission to visit Caballo Island must be obtained from the Philippine Navy. Permission is not required to visit Carabao Island or El Fraile Island, however arrangements must be made locally to hire a boat or a "banca" for transportation to these islands. Access is not easy, there are no docks on these islands and climbing up to the sally port at Fort Drum or landing on the rough rocks of Fort Frank is difficult at best. The dilapidated state of the structures there and the damage caused by scrappers makes exploration of the interior of these structures dangerous.

Fort Wint, on El Grande Island in Subic Bay is now owned by a municipal government agency and plans are being made for developing its use. Worth seeing on the island are the two remaining 6in. disappearing guns which are in much better shape than those remaining on Corregidor. Two 10in. disappearing guns and four 3in. pedestal-mount guns were removed from this island in the early 1960s by the State of Washington. The two 10in. guns and two of the 3in. guns are on display at Fort Casey State Park on Whidbey Island, Washington. The other two 3in. guns are at Fort Flagler State Park on Marrowstone Island, Washington.

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Appendix

American seacoast artillery weapon characteristics

Abbreviations:

AA anti-aircraft mount; **CM** barbette mount, casemated emplacement; **DCLF** disappearing (limited fire traverse); **Mor** Mortar; **Ped** pedestal; **LRBC** long-ranged barbette; **FM** field mount; **PM** Panama Mount; **F** fixed mount; **M** mobile mount; **TM** Army turret mount; **TD** tractor drawn; **mm** millimeter; **in.** inch.

Gun model	Caliber gun	Gun weight (tons)	Proj. weight (lbs)	Powder weight (lbs)	Muzzle velocity (ft/sec)	Carriage type	Carriage weight (tons)	Max. elev (deg.)	Traverse (deg.)	Max. range (yds)
14in. M1907	34	50	1,660	421	2,350	M1907 DCLF	318	20	170	22,800
14in. M1909	40	70	1,660	436	2,350	M1909 TM	964	15	360	19,200
14in. M1910	40	64	1,600	421	2,350	M1907MI DCLF	318	20	170	22,800
12in. M1895MI	35	52	1046	318	2,250	M1901 DCLF	251	15	170	17,800
12in. M1895MII	35	52	1046	318	2,250	M1917 BCLR	151	35	360	27,600
12in. M1890MI	10	13	1040	89	1,500	M1896MI Mor	64	65	360	12,000
12in M1908	10	8	1040	89	1,500	M1908 Mor	167	65	360	12,000
12in. M1912	15	15	1040	89	1,500	M1896MIII Mor.	64	65	360	19,300
10in M895MI	35	30	604	158	2,265	M1901 DCLF	167	12	170	15,300
6in M1905MII	50	11	106	32	2,600	M1905MI DCLF	56	15	170	16,500
6in. M1908	50	6	106	32	2,600	M1905MII DCLF	56	15	170	16,500
6in. M1908MI	50	6	106	32	2,600	M1910 CM		12	60	14,790
155mm M1918	38	1.2	95	17	1,955	M1918 TD	10	35	30 (360)	16,100
3in. M1903	55	3	15	5	2,600	M1903 Ped	3	16	360	11,350
3in. M1917	50	1	15	5	2,800	M1917 AA F		80	360	9,300
3in. M3	50	1	15	5	2,800	M2 AA M	6	80	360	9,300

List of emplacements and batteries of the harbor defenses of Manila and Subic bays

This table shows the gun and carriage types, followed by model numbers of ordnance originally mounted where known. The dates are for the start of construction and the date of transfer to the Coast Artillery.

Original Construction 1904–16

Location	Battery name	No. of emplacements	Guns	Carriages	Constructed	Completed	(Note)
Fort Mills	Way	4	12in. M1890MI	Mor M1896MI	1904	1910	(1)
	Geary	4	12in. M1908	Mor M1908	1907	1911	(2)
		4	12in. M189OMI	Mor M1896MI			
	Cheney	1	12in. M1895	DC M1901	1906	1910	(SE)
		1	12in. M1895MI	DC M1901			
	Wheeler	1	12in. M1895	DC M1901	1904	1910	(SE)
		1	12in. M1895MI	DC M1901			gone
	Crockett	2	12in. M1895MI	DC M1901	1907	1910	(SE)
	Grubbs	2	10in. M1895MI	DC M1901	1907	1911	(SE)
	Ramsay	2	6in. M1905	DC M1905	1907	1911	
		1	6in. M1905	DC M1905MI			
	Morrison	2	6in. M1905	DC M1905MI	1907	1910	(SE)
	James	4	3in. M1903	Ped M1903	1908	1910	(3)
	Maxwell Keyes	2	3in. M1903	Ped M1903	1912	1913	gone
Fort Frank	Greer	1	14in. M1907MI	DC M1907	1908	1913	(4)
	Crofton	1	14in. M1907MI	DC M1907	1909	1913	gone
	Koehler	8	12in. M1908	Mor M1908	1909	1913	gone
	Hoyle	2	3in. M1903	Ped M1903	1919	1919	(5)
Fort Drum	Wilson	2	14in. M1909	TM M1909	1909	1918	(SE)
	Marshall	2	14in. M1909	TM M1909	1909	1918	(SE)
	Roberts	2	6in. M1908MII	CM M1910	1909	1918	(SE)
	McCrea	2	6in. M1908MII	CM M1910	1909	1918	(6)
Fort Hughes	Woodruff	1	14in. M1910	DC M1907MI	1911	1914	(7)
	Gillespie	1	14in. M1910MI	DC M1910MI	1911	1914	(SE)
	Craighill	4	12in. M1912	Mor M1896MIII	1904	1919	(SE)
	Leach	2	6in. M1908	DC M1905MIII	1912	1914	gone
	Fuger	2	3in. M1903	Ped M1903	1912	1914	gone
Fort Wint	Warwick	2	10in. M1895MI	DC M1901	1907	1910	(8)
	Woodruff	2	6in. M1905	DC M1905	1906	1910	(9)
	Hall	2	6in. M1905	DC M1905	1906	1910	(SE)
	Jewell	4	3in. M1903	Ped M1903	1908	1910	(8)
	Flake	4	3in. M1903	Ped M1903	1908	1910	(8)

Post World War I era

Fort Mills' gun batteries

Location	Battery name	No. of emplacements	Guns	Carriages	Constructed	Completed	(Note)
	Frank G. Smith	1	12in. M1895	BCLR M1917	1919	1921	(SE)
	(Clint C.) Hearn	1	12in. M1895A2	BCLR M1917	1918	1921	(SE)
	RJ-43	1	8in. M1888A2	BC(RY) M1918	1941	1942	(10)
	A. H. Cushing	2	3in. M1903	Ped M1903	1919	1919	gone
	Guy B. Hanna	2	3in. M1903	Ped M1903	1917	1919	gone
Fort Mills AA guns, 1917–20	No.2 (tail)	2	3in. M1917	AA M1917	1917	1919	(11)
	(No.1, No.3)	2	3in. M1917	AA M1917	1920	1921	
	(M. Hill)	2	3in. M1917	AA M1917	1920	1921	
	(No.2?)	1	3in. M1917	AA M1917	1917	1919	
	(No.10)	1	3in. M1917	AA M1917	1917	1919	
	(No.9)	1	3in. M1917	AA M1917	1917	1919	
		1	3in. M1917	AA M1917	1917	1919	
Fort Mills 155mm guns, 1941 (13)	Martin	2	155mm	gun blocks	193?		
	Hamilton (South)	3	155mm	PM	1941	1941	
	Kysor (North)	2	155mm	PM/FM	1938	1939	
	Rock Point	2	155mm	PM/FM	1937	1938	
	Sunset	4	155mm	PM	1937	1938	
	Stockade	2	155mm	FM	1941	1941	
	Monja	2	155mm	CM	1933	1936	(12)
	Concepcion	3	155mm	PM	1937	1938	
	Levagood	3	155mm	PM	1941	1942	
	Ordnance Point	4	155mm	PM/FM	1941	1941	
Fort Mills AA guns, 1941 (13)	Denver	4	3in. M3	AA M2	1941	1941	
	Chicago	4	3in. M3	AA M2	1941	1941	
	Flint	4	3in. M3	AA M2	1941	1941	
	Boston	4	3in. M3	AA M2	1941	1941	
	Hartford	4	3in. M3	AA M2	1941	1941	
	Globe	3	3in. M3	AA M2	1942	(guns from Mariveles)	
	Indiana	12	.50 cal.	AAMG	1941	1941	
	Kingston	12	.50 cal.	AAMG	1941	1941	
	Lansing	12	.50 cal.	AAMG	1941	1941	
	Mobile	12	.50 cal.	AAMG	1941	1941	

Other forts

Location	Battery name	No. of emplacements	Guns	Carriages	Constructed	Completed	(Note)
Fort Frank	Ermita	4	3in. M3	AA M2	1941	1941	
	Frank	4	155mm	PM/FM	1937	1938	
Fort Hughes	Idaho	4	3in. M3	AA M2	1941	1941	
	Williams	2	155mm	PM/FM	1942	1942	
	Hooker	1	155mm	PM/FM	1942	1942	
Fort Drum	Hoyle	1	3in. M1903	Ped M1903	1911	1941	(5)
	Exeter	2	3in. M1917/M3	AA M1917/M2	1934/1941	1934/1941	(14)
Fort Wint	Cebu	4	3in. M1917/M3	AA M1917/M2	1920	to Bataan Dec. 41	
	Subic	2	155mm	FM	1941	1941	

Wartime "Roving" Tractor-drawn Gun Batteries

These were guns taken from the mounts listed previously and named after their respective commanders.

Location	Battery name	No. of emplacements	Guns	Carriages	Constructed	Completed	(Note)
Fort Mills	Byrne	1	155mm	FM			
	Dawes	1	155mm	FM			
	Ek	1	155mm	FM			
	Farris	1	155mm	FM			
	Fulmer	2	155mm	FM			
	Gulick	2	155mm	FM			
	Lehr	1	155mm	FM			
	Rose	1	155mm	FM			
	Wright	2	155mm	FM			

Other Coast Artillery Batteries

Location	Battery name	No. of emplacements	Guns	Carriages	Constructed	Completed	(Note)
Ogonbolo		4	155mm	PM			
Bagac		1	8in. M1888	BC(RY) M1918	1941		(10)

Notes

(1) One of Battery Way's mortars was found to be inoperable in 1942. Two more were knocked out by shellfire in 1942. The last mortar froze in place on May 6, 1942.

(2) Battery Geary was destroyed by a magazine explosion after a direct hit on May 2, 1942.

(3) Two guns were often removed from the four-gun emplacements and emplaced (temporarily) elsewhere. It is likely that James only had two 3in. M1903 guns by 1941.Today, all the guns are gone.

(4) The Japanese may have had Battery Greer in operable condition again.

(5) One of the guns of Battery Hoyle was removed in the 1930s. The other gun was moved to Fort Drum in 1941: only the base now remains there.

(6) Battery McCrea was nearly completely destroyed by shellfire and internal explosion April 11–13, 1945.

(7) Battery Woodruff was considered unsafe to fire by the late 1930s, but was repaired and used in 1942.

(8) By 1941 only four of the eight 3in. guns remained at Fort Wint. These guns, along with the two 10in. DCs of Battery Warwick, were moved to the State of Washington in the early 1960s.

(9) Explosions destroyed the magazines of both Battery Hall and Battery Woodruff at Fort Wint after the war.

(10) Only two 8in. gun emplacements were completed and armed – one on the side of Malinta Hill on Corregidor and the other near Bagac on Bataan. These guns were among those originally to be used for the unimplemented Inland Seas Defense Project of 1941.

(11) Only two M1917 guns were shipped to the Philippines: they were emplaced at Morrison Hill. The rest of the batteries had emplacements only.

(12) Battery Monja was a casemated work built to hold a 155mm gun on a modified carriage.

(13) Several Panama mounts were built in 1937, but there were more guns on hand than mounts built. This is the disposition of the guns as of December 1941 based on both official and secondary sources. Some 155mm batteries and AA batteries were moved and renamed during the fighting. Source: Report on Philippine Command and the H.D. of Manila and Subic Bays, 14 Feb 1941–6 May 1942 by M.G. George F. Moore (see *Further reading*.)

(14) The guns of Battery Exeter were transferred from the AA battery on Morrison Hill, Fort Mills. They were later replaced by 3in. M3 guns on M2 mounts.

(15) Battery Ramsay's two central transverse magazines exploded during World War II, resulting in its three 6in. guns being badly damaged. Parts of the guns remain today.

Minefield Facilities

In addition to artillery, minefields were also employed to protect the harbor entrances by the Army from the turn of the century to 1945. Mine facilities ashore included the mine wharf, a tramway, torpedo storehouse(s) and loading room(s), cable tank(s), mining casemate(s) and observing station(s). The "fleet" included a mine planter, a distribution box boat and some yawls. The minefields were protected by light artillery batteries of 3in. to 6in. guns. Mine defenses were constructed at Fort Mills, Fort Drum, Fort Hughes, and Fort Wint.

(SE) indicates the battery still exists.

Index

Figures in **bold** refer to illustrations

Design, technology and history of key fortresses, strategic positions and defensive systems

American Defenses of Corregidor and Manila Bay 1898–1945

The Philippines were declared an American Territory on January 4, 1899, and fortification construction began soon after on the islands in the mouth of Manila Bay. Among the sites built were Fort Mills (Corregidor), Fort Frank, and the unique and formidable "concrete battleship" of Fort Drum. War came in December 1941, and the defenses suffered constant Japanese bombardment, leading to the surrender of American forces. In 1945 the forts were manned by Japanese soldiers determined to hold out to the bitter end: bloody and brutal fighting ensued. This title brings to life the fortifications of this key strategic location, and considers both their effectiveness and historical importance.



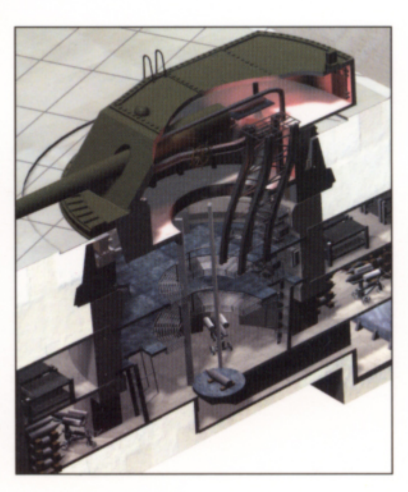
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